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DC INVERTER MRV III-S

Design,Installation&Maintenance instruction
R410A HEAT PUMP 50/60Hz

AV08NMSETA

AV10NMSETA

AV12NMSETA

SYJS-08-2013REV.B

Edition:2013-08

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DC INVERTER MRV III-S

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1. General information

MRVIII-S adopts refrigerant R410A. It is with DC inverter technology, high efficiency and energy saving, intelligent control, etc. The system can realize max 1-19 .

Features:

1. High efficiency and energy saving

1.1 Adopt High efficient rotary compressor, compact design, compared to the scroll compressor smaller, more efficient in part load operation!

1.2 The compressor bottom design oil temperature sensor, it can control heater on/off station, reduced the compressor standby ratio, saving energy.

1.3 Adopt high frequency DC motor, improve efficiency

1.4 Stepless converter technique, compressor adopt 180° vector control technology, improve the running ratio 17%.

1.5 High efficiency heat exchanger

1.6 Adopt refrigerant control technology, remove high-pressure accumulator, reduce the amount of refrigerant.

1.7 Outdoor unit can automatic recover refrigerant.

2. Comfortable and quieter

2.1 Large diameter streamlined double axial fan design, reduces vibration and reduce pressure loss

2.2 Units with silent operation function, Outdoor Noise is 45 dB（A）

3. Beautiful and more convenient

3.1 Miniaturization side wind design, small footprint, can be easily placed。

3.2 Long pipe, according to the actual needs ,choosing the right outdoor unit installation location

3.3 4 way piping is possible (front, rear, right, down), More flexible installation

3.4 Reserve space above the unit, removable roof for repairing, maintenance more convenient

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2. Specification

Equivalent HP			8	10	12
Model			AV08NMSETA	AV10NMSETA	AV12NMSETA
Nominal cooling capacity(kW)			22.6	28	33.50
Nominal heating capacity(kW)			25	31.5	37.50
Heating capacity at low temp.(kW)			21.2	25.6	29.00
Power source			3N ～ .380-400V.50/60Hz		
IP level			IP24	IP24	IP24
Electrical characteristics	cooling	Operating/Max.current(A)	9.6 / 17.2	13.2 / 23.8	16.4/26
		Operating/Max.consumption(kW)	5.79 / 10.42	8.0 / 14.4	9.82/15.4
	heating	Operating/Max.current(A)	9.0 / 16.2	12.4 / 22.3	16.2/25.3
		Operating/Max.consumption(kW)	5.43 / 9.78	7.5 / 12.4	9.62/15.0
	Power consumption when heating at low temp.(kW)		6.5	9	11.5
	Output power of outdoor motor(kW)		0.145+0.18	0.145+0.18	0.145+0.18
Exterior dimensions(mm)			1636×1050×400	1636×1050×400	1636×1050×400
Weight(Kg)			168	168	168
Exterior colour			ivory white	ivory white	ivory white
Compressor type			Twin rotary		
Compressor model			LNB53F	LNB53F	LNB53F
Oil charge(ml)			2000	2000	2000
Oil model			FV50S	FV50S	FV50S
Outdoor motor rate(rpm)			770+850	770+850	770+850
Outdoor airflow(m)			10000	10000	10000
Refrigerant (R410A) charge(Kg)			7.4	7.4	7.4
Gas piping(mm)			φ19.05	φ22.22	φ25.4
Liquid piping(mm)			φ9.52	φ12.7	φ12.7
Noise level(dB(A)			55	58	60
Max. indoor units			13	16	19

Norminal condition: indoor temperature (cooling): 27℃DB/19℃WB, indoor temperature (heating): 20℃DB/14.5℃WB Outdoor temperature(cooling): 35℃DB/24℃WB, outdoor temperature(heating): 7℃DB/6℃WB

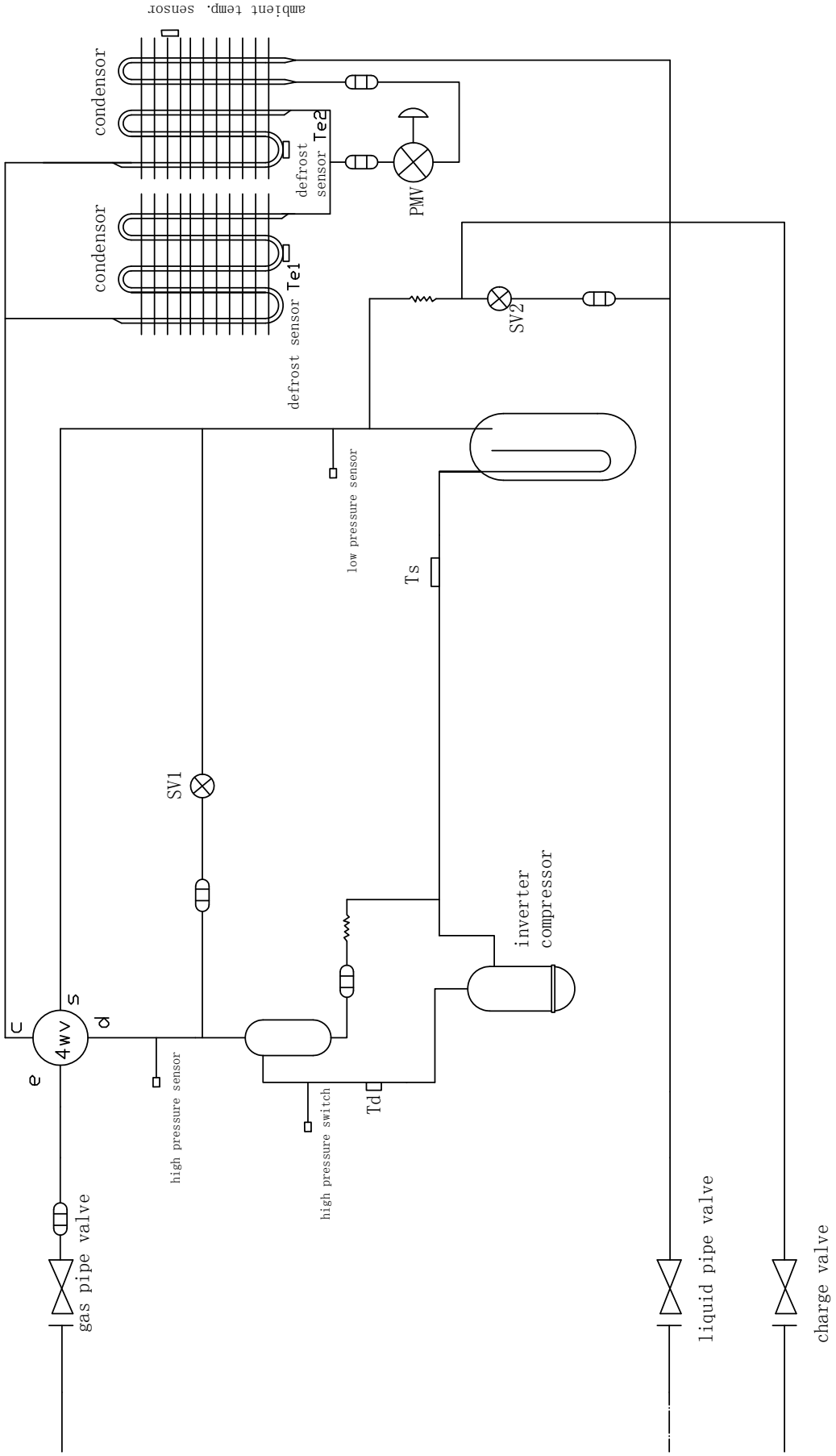
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

3. Indoor model list

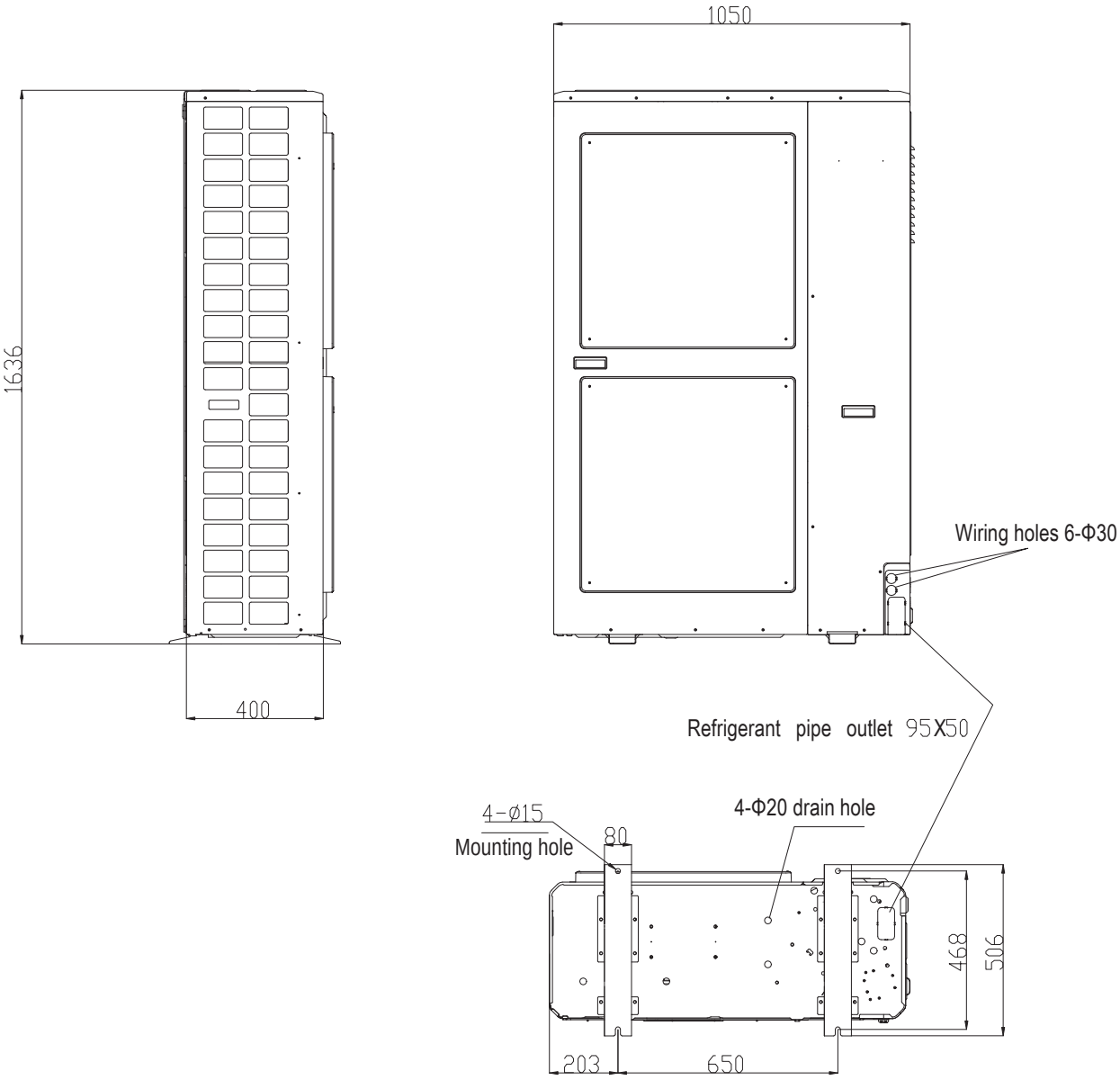
4-WAY CASSETTE TYPE / PB-700IB AB092MCERA AB122MCERA AB162MCERA 	**HIGH WALL** EEV INSIDE AS072MGERA AS092MGERA AS122MGERA AS162MGERA AS182MGERA AS242MGERA
4-WAY CASSETTE TYPE /PB-950JB AB182MCERA AB242MCERA AB282MCERA AB302MCERA AB382MCERA AB482MCERA 	**MED ESP DUCT TYPE(80/120Pa)** AD182MZERA AD242MZERA AD282MZERA AD302MNERA AD382MNERA AD482MNERA
LOW ESP DUCT TYPE AD072MLERA AD092MLERA AD122MLERA AD162MLERA AD182MLERA AD242MLERA 	**MED ESP DUCT TYPE(50/96Pa)** AD182MMERA AD242MMERA AD282MMERA AD302MMERA AD382MMERA AD482MMERA
HIGH ESP DUCT TYPE AD182MHERA AD242MHERA AD282MHERA AD302MHERA AD382MHERA AD482MHERA AD722MHERA AD962MHERA 	**CONVERTIBLE TYPE** AC092MCERA AC122MCERA AC162MCERA AC182MCERA AC242MCERA AC282MEERA AC302MEERA AC382MFERA AC482MFERA
SLIM LOW ESP DUCT AD072MSERA AD092MSERA AD122MSERA AD162MSERA AD182MSERA AD242MSERA 	**BUILIT-IN FLOOR STANDING** AE072MLERA AE092MLERA AE122MLERA AE162MLERA AE182MLERA AE242MLERA
2 WAY CASSETTE/1055IB AB072MBERA AB092MBERA AB122MBERA AB162MBERA AB182MBERA 	**CONSOLE TYPE** AF072MAERA AF092MAERA AF122MAERA AF182MAERA

The information for indoor units refer to the manual of MRVIII-C

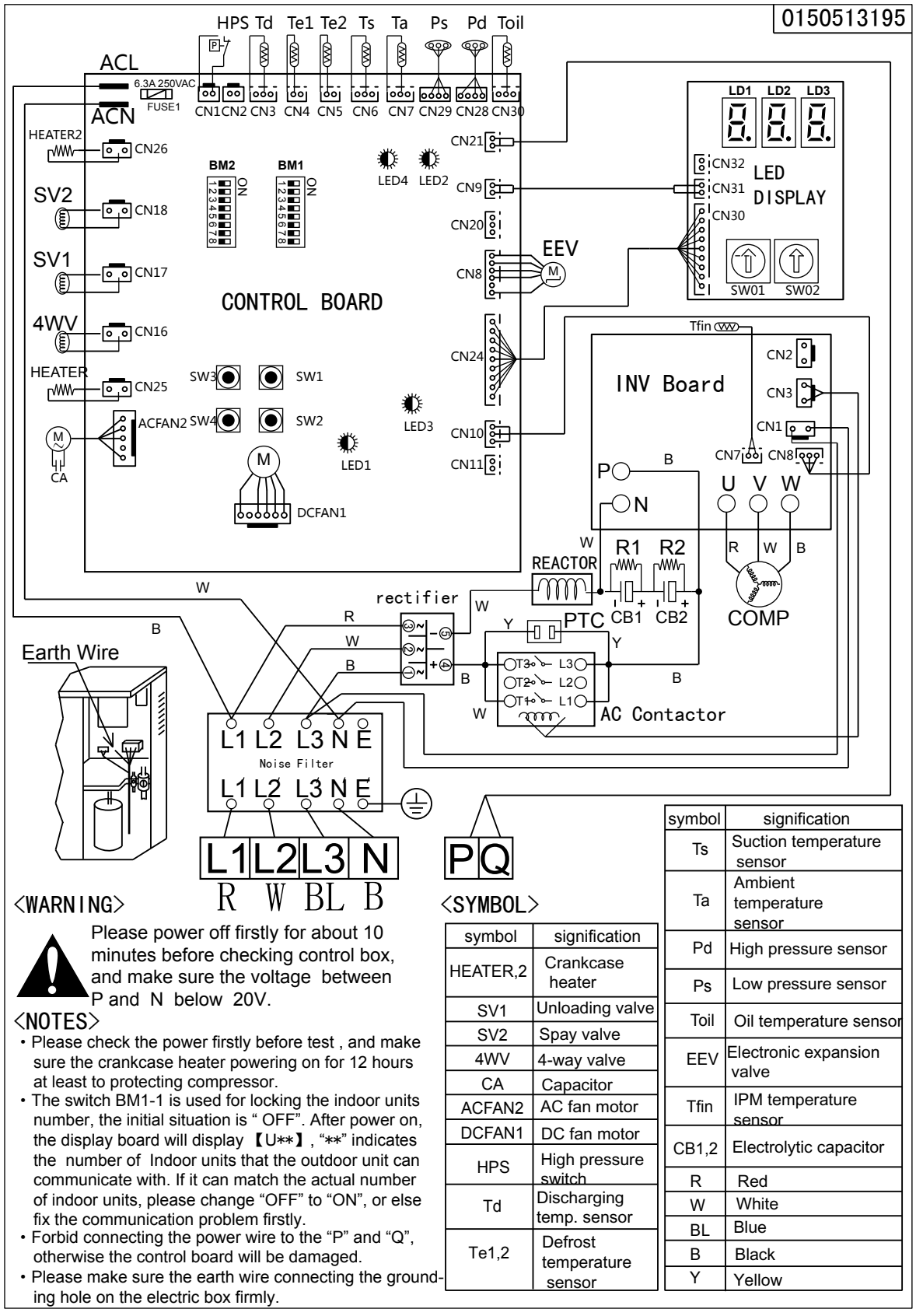
4. Refrigerant circuit



5. Dimension


1050
1636
400
Wiring holes 6-Φ30
Refrigerant pipe outlet 95X50
4-Φ20 drain hole
4-Ø15
Mounting hole
80
468
506
203
650

6. Wiring diagram



<WARNING>

Please power off firstly for about 10 minutes before checking control box, and make sure the voltage between P and N below 20V.

<NOTES>

- Please check the power firstly before test , and make sure the crankcase heater powering on for 12 hours at least to protecting compressor.
- The switch BM1-1 is used for locking the indoor units number, the initial situation is " OFF". After power on, the display board will display 【U**】, "**" indicates the number of Indoor units that the outdoor unit can communicate with. If it can match the actual number of indoor units, please change "OFF" to "ON", or else fix the communication problem firstly.
- Forbid connecting the power wire to the "P" and "Q", otherwise the control board will be damaged.
- Please make sure the earth wire connecting the grounding hole on the electric box firmly.

<SYMBOL>

symbol	signification
HEATER,2	Crankcase heater
SV1	Unloading valve
SV2	Spay valve
4WV	4-way valve
CA	Capacitor
ACFAN2	AC fan motor
DCFAN1	DC fan motor
HPS	High pressure switch
Td	Discharging temp. sensor
Te1,2	Defrost temperature sensor

symbol	signification
Ts	Suction temperature sensor
Ta	Ambient temperature sensor
Pd	High pressure sensor
Ps	Low pressure sensor
Toil	Oil temperature sensor
EEV	Electronic expansion valve
Tfin	IPM temperature sensor
CB1,2	Electrolytic capacitor
R	Red
W	White
BL	Blue
B	Black
Y	Yellow

7. Capacity table

AV08NMSETA															Cooling mode
Capacity factor	Outdoor temp. (℃ DB)	Indoor temp.(℃ WB)													
		14(℃)		16(℃)		18(℃)		19(℃)		20(℃)		22(℃)		24(℃)	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
130%	-5	20.40	2.57	24.10	3.11	27.80	3.60	29.70	4.07	30.90	4.52	31.80	5.08	32.30	5.70
	0	20.40	2.58	24.10	3.12	27.80	3.63	29.70	4.10	30.90	4.56	31.80	5.12	32.30	5.75
	5	20.4	2.60	24.1	3.14	27.8	3.68	29.7	4.15	30.9	4.62	31.8	5.18	32.3	5.82
	10	20.4	2.74	24.1	3.30	27.8	3.86	29.7	4.17	30	4.65	30.7	5.43	31.4	5.83
	15	20.4	2.87	24.1	3.44	27.8	4.03	28.7	4.34	29.1	5.03	29.7	5.60	30.5	6.50
	20	20.4	3.01	24.1	3.81	27.5	4.61	27.8	4.64	28.1	5.12	28.8	6.01	29.5	6.71
	25	20.4	3.61	24.1	4.57	26.5	5.21	26.8	5.23	27.2	5.79	27.9	6.37	28.6	7.20
	30	20.4	4.25	24.1	5.45	25.6	5.83	25.9	5.83	26.3	6.43	26.9	7.07	27.7	7.62
	35	20.4	5.04	24	6.35	24.7	6.42	25	6.45	25.3	7.13	26	7.86	26.7	8.26
	41	20.4	5.75	23.1	6.84	23.8	6.91	24.1	6.95	24.5	7.69	25.1	8.57	25.9	9.02
	43	20.4	6.23	22.6	7.22	23.2	7.87	23.6	8.01	24	8.89	24.6	9.87	25.3	10.42
120%	-5	18.90	2.41	22.20	2.84	25.70	3.13	27.30	3.53	29.40	4.20	31.10	4.95	31.70	5.53
	0	18.90	2.42	22.20	2.85	25.70	3.16	27.30	3.56	29.40	4.24	31.10	4.99	31.70	5.58
	5	18.9	2.44	22.2	2.87	25.7	3.21	27.3	3.61	29.4	4.30	31.1	5.05	31.7	5.65
	10	18.9	2.49	22.2	3.01	25.7	3.53	27.3	3.79	29	4.45	30.2	5.26	30.8	5.57
	15	18.9	2.61	22.2	3.14	25.7	3.70	27.3	3.96	28.7	4.57	29.3	5.51	29.9	5.96
	20	18.9	2.74	22.2	3.39	25.7	4.17	27.3	4.59	27.7	5.09	28.3	5.59	28.9	6.39
	25	18.9	3.23	22.2	4.08	25.7	5.01	26.4	5.20	26.8	5.74	27.4	6.33	28	6.64
	30	18.9	3.76	22.2	4.83	25.1	5.77	25.5	5.80	25.9	6.42	26.4	7.05	27	7.42
	35	18.9	4.52	22.2	5.70	24.2	6.37	24.6	6.41	24.9	7.08	25.5	7.79	26.1	8.19
	41	18.9	5.20	22.2	6.69	23.3	6.84	23.6	6.86	24	7.54	24.6	8.50	25.2	9.00
	43	18.9	5.57	22.2	6.94	22.8	7.69	23.1	7.87	23.4	8.70	24	9.80	24.7	10.37
110%	-5	17.30	2.13	20.40	2.57	23.50	2.97	25.00	3.22	26.60	3.76	30.60	4.62	31.30	5.09
	0	17.30	2.14	20.40	2.58	23.50	3.00	25.00	3.25	26.60	3.80	30.60	4.66	31.30	5.14
	5	17.3	2.16	20.4	2.60	23.5	3.05	25	3.30	26.6	3.86	30.6	4.72	31.3	5.21
	10	17.3	2.26	20.4	2.72	23.5	3.20	25	3.44	26.6	4.05	29.7	4.80	30.3	5.19
	15	17.3	2.36	20.4	2.85	23.5	3.34	25	3.57	26.6	4.23	28.7	4.88	29.3	5.30
	20	17.3	2.48	20.4	3.00	23.5	3.68	25	4.03	26.6	4.85	27.8	5.56	28.4	5.83
	25	17.3	2.87	20.4	3.59	23.5	4.41	25	4.68	25.9	5.29	26.5	6.05	27.1	6.89
	30	17.3	3.41	20.4	4.27	23.5	5.24	25	5.69	25.2	6.37	25.9	7.00	26.5	7.36
	35	17.3	4.00	20.4	5.03	23.5	6.19	24.1	6.36	24.4	7.03	25	7.74	25.6	8.12
	41	17.3	4.68	20.4	5.90	22.8	6.79	23.2	6.80	23.5	7.40	24	8.46	24.7	8.88
	43	17.3	5.04	20.4	6.27	22.2	7.21	22.7	7.58	23	8.65	23.5	9.56	24.1	10.06

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AV08NMSETA															Cooling mode
Capacity factor	Outdoor temp. (℃ DB)	Indoor temp.(℃ WB)													
		14(℃)		16(℃)		18(℃)		19(℃)		20(℃)		22(℃)		24(℃)	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
100%	-5	15.70	1.99	18.50	2.31	21.30	2.70	22.60	2.88	24.20	3.36	27.00	4.17	30.70	4.85
	0	15.70	2.00	18.50	2.32	21.30	2.73	22.60	2.91	24.20	3.40	27.00	4.21	30.70	4.90
	5	15.7	2.02	18.5	2.34	21.3	2.78	22.6	2.96	24.2	3.46	27	4.27	30.7	4.97
	10	15.7	2.03	18.5	2.45	21.3	2.87	22.6	3.09	24.2	3.63	27	4.48	29.7	5.05
	15	15.7	2.12	18.5	2.56	21.3	3.00	22.6	3.23	24.2	3.79	27	4.69	28.7	5.16
	20	15.7	2.23	18.5	2.68	21.3	3.20	22.6	3.50	24.2	4.21	27	5.42	27.8	5.79
	25	15.7	2.52	18.5	3.14	21.3	3.85	22.6	4.21	24.2	5.05	26.4	5.66	26.9	6.55
	30	15.7	2.98	18.5	3.74	21.3	4.56	22.6	5.00	24.2	5.97	25.4	6.95	25.9	7.30
	35	15.7	3.50	18.5	4.41	21.3	5.38	22.6	5.79	24	6.99	24.5	7.69	25	8.06
	41	15.7	4.11	18.5	5.11	21.3	6.30	22.6	6.64	23.1	7.65	23.6	8.40	24.1	8.84
	43	15.7	4.47	18.5	5.48	21.3	6.67	22.6	7.28	22.5	8.07	23.1	8.83	23.6	9.29
90%	-5	14.20	1.69	16.70	2.05	19.30	2.36	20.50	2.53	21.80	2.97	24.30	3.71	26.80	4.31
	0	14.20	1.70	16.70	2.06	19.30	2.39	20.50	2.56	21.80	3.01	24.30	3.75	26.80	4.36
	5	14.2	1.72	16.7	2.08	19.3	2.44	20.5	2.61	21.8	3.07	24.3	3.81	26.8	4.43
	10	14.2	1.81	16.7	2.18	19.3	2.55	20.5	2.74	21.8	3.23	24.3	3.98	26.8	4.64
	15	14.2	1.90	16.7	2.27	19.3	2.66	20.5	2.87	21.8	3.37	24.3	4.15	26.8	4.84
	20	14.2	1.99	16.7	2.37	19.3	2.79	20.5	3.02	21.8	3.61	24.3	4.63	26.8	5.59
	25	14.2	2.19	16.7	2.72	19.3	3.31	20.5	3.61	21.8	4.34	24.3	5.56	26.3	6.49
	30	14.2	2.59	16.7	3.23	19.3	3.93	20.5	4.30	21.8	5.15	24.3	6.64	25.4	7.23
	35	14.2	3.05	16.7	3.80	19.3	4.63	20.5	5.06	21.8	6.08	24	7.62	24.5	7.99
	41	14.2	3.56	16.7	4.45	19.3	5.43	20.5	5.58	21.8	7.12	23.1	8.33	23.4	8.74
	43	14.2	3.93	16.7	4.70	19.3	5.78	20.5	6.20	21.8	7.69	22.5	8.66	22.9	9.19
80%	-5	12.60	1.51	14.80	1.80	17.10	2.05	18.30	2.22	19.30	2.60	21.60	3.24	23.90	3.75
	0	12.60	1.52	14.80	1.81	17.10	2.08	18.30	2.25	19.30	2.64	21.60	3.28	23.90	3.80
	5	12.6	1.54	14.8	1.83	17.1	2.13	18.3	2.30	19.3	2.70	21.6	3.34	23.9	3.87
	10	12.6	1.60	14.8	1.91	17.1	2.23	18.3	2.40	19.3	2.83	21.6	3.49	23.9	4.06
	15	12.6	1.67	14.8	2.00	17.1	2.34	18.3	2.50	19.3	2.95	21.6	3.65	23.9	4.25
	20	12.6	1.75	14.8	2.09	17.1	2.44	18.3	2.63	19.3	3.09	21.6	3.90	23.9	4.87
	25	12.6	1.89	14.8	2.33	17.1	2.81	18.3	3.07	19.3	3.67	21.6	4.68	23.9	6.04
	30	12.6	2.23	14.8	2.76	17.1	3.34	18.3	3.65	19.3	4.35	21.6	5.56	23.9	6.70
	35	12.6	2.63	14.8	3.25	17.1	3.93	18.3	4.30	19.3	5.14	21.6	6.57	23.9	7.89
	41	12.6	3.13	14.8	3.79	17.1	4.58	18.3	5.02	19.3	6.03	21.6	7.67	22.8	8.67
	43	12.6	3.61	14.8	4.11	17.1	4.86	18.3	5.45	19.3	6.62	21.6	7.92	21.7	8.95

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AV08NMSETA															Cooling mode
Capacity factor	Outdoor temp. (℃ DB)	Indoor temp.(℃ WB)													
		14(℃)		16(℃)		18(℃)		19(℃)		20(℃)		22(℃)		24(℃)	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
70%	-5	11.00	1.30	13.00	1.55	14.90	1.77	15.90	1.90	16.90	2.23	18.90	2.77	20.90	3.69
	0	11.00	1.31	13.00	1.56	14.90	1.80	15.90	1.93	16.90	2.27	18.90	2.81	20.90	3.74
	5	11	1.33	13	1.58	14.9	1.85	15.9	1.98	16.9	2.33	18.9	2.87	20.9	3.81
	10	11	1.40	13	1.65	14.9	1.93	15.9	2.07	16.9	2.43	18.9	3.01	20.9	3.50
	15	11	1.45	13	1.72	14.9	2.01	15.9	2.16	16.9	2.54	18.9	3.14	20.9	3.65
	20	11	1.52	13	1.80	14.9	2.11	15.9	2.26	16.9	2.66	18.9	3.28	20.9	3.87
	25	11	1.59	13	1.96	14.9	2.35	15.9	2.56	16.9	3.06	18.9	3.88	20.9	4.64
	30	11	1.89	13	2.32	14.9	2.79	15.9	3.04	16.9	3.63	18.9	4.60	20.9	5.50
	35	11	2.23	13	2.72	14.9	3.27	15.9	3.57	16.9	4.25	18.9	5.42	20.9	6.49
	41	11	2.59	13	3.14	14.9	3.82	15.9	4.11	16.9	4.98	18.9	6.33	20.9	7.60
	43	11	2.74	13	3.30	14.9	4.23	15.9	4.21	16.9	5.37	18.9	6.88	20.9	8.29
60%	-5	9.40	1.11	11.10	1.32	12.80	1.48	13.70	1.60	14.60	1.86	16.20	2.31	17.90	2.68
	0	9.40	1.12	11.10	1.33	12.80	1.51	13.70	1.63	14.60	1.90	16.20	2.35	17.90	2.73
	5	9.4	1.14	11.1	1.35	12.8	1.56	13.7	1.68	14.6	1.96	16.2	2.41	17.9	2.80
	10	9.4	1.19	11.1	1.41	12.8	1.64	13.7	1.75	14.6	2.05	16.2	2.52	17.9	2.94
	15	9.4	1.24	11.1	1.46	12.8	1.70	13.7	1.82	14.6	2.14	16.2	2.64	17.9	3.07
	20	9.4	1.29	11.1	1.53	12.8	1.78	13.7	1.91	14.6	2.24	16.2	2.77	17.9	3.21
	25	9.4	1.35	11.1	1.62	12.8	1.93	13.7	2.09	14.6	2.49	16.2	3.14	17.9	3.75
	30	9.4	1.57	11.1	1.92	12.8	2.30	13.7	2.48	14.6	2.95	16.2	3.72	17.9	4.43
	35	9.4	1.85	11.1	2.25	12.8	2.68	13.7	2.91	14.6	3.47	16.2	4.38	17.9	5.23
	41	9.4	2.15	11.1	2.61	12.8	3.12	13.7	3.39	14.6	4.05	16.2	5.12	17.9	6.12
	43	9.4	2.33	11.1	2.66	12.8	3.38	13.7	3.77	14.6	4.40	16.2	5.47	17.9	6.66
50%	-5	7.90	0.93	9.30	1.11	10.70	1.21	11.40	1.27	12.10	1.51	13.50	1.88	14.90	2.17
	0	7.90	0.94	9.30	1.12	10.70	1.24	11.40	1.30	12.10	1.55	13.50	1.92	14.90	2.22
	5	7.9	0.96	9.3	1.14	10.7	1.29	11.4	1.35	12.1	1.61	13.5	1.98	14.9	2.29
	10	7.9	0.99	9.3	1.16	10.7	1.35	11.4	1.44	12.1	1.68	13.5	2.07	14.9	2.40
	15	7.9	1.03	9.3	1.20	10.7	1.41	11.4	1.51	12.1	1.76	13.5	2.16	14.9	2.51
	20	7.9	1.08	9.3	1.27	10.7	1.46	11.4	1.57	12.1	1.84	13.5	2.27	14.9	2.62
	25	7.9	1.12	9.3	1.32	10.7	1.54	11.4	1.66	12.1	1.97	13.5	2.47	14.9	2.92
	30	7.9	1.29	9.3	1.55	10.7	1.82	11.4	1.98	12.1	2.33	13.5	2.94	14.9	3.47
	35	7.9	1.51	9.3	1.81	10.7	2.14	11.4	2.32	12.1	2.74	13.5	3.44	14.9	4.08
	41	7.9	1.76	9.3	1.99	10.7	2.49	11.4	2.70	12.1	3.20	13.5	4.01	14.9	4.76
	43	7.9	1.93	9.3	2.16	10.7	2.71	11.4	2.91	12.1	3.43	13.5	4.35	14.9	5.16

Haier

DC INVERTER MRV III-S

AV10NMSETA															Cooling mode
Capacity factor	Outdoor temp. (℃ DB)	Indoor temp.(℃ WB)													
		14(℃)		16(℃)		18(℃)		19(℃)		20(℃)		22(℃)		24(℃)	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
130%	-5	25.20	3.57	29.70	4.31	34.20	5.01	36.20	5.66	37.40	6.28	38.10	7.06	39.10	7.92
	0	25.20	3.58	29.70	4.32	34.20	5.04	36.20	5.69	37.40	6.32	38.10	7.10	39.10	7.97
	5	25.20	3.60	29.70	4.34	34.20	5.09	36.20	5.74	37.40	6.38	38.10	7.16	39.10	8.04
	10	25.20	3.78	29.70	4.56	34.20	5.33	36.60	5.77	36.90	6.43	37.80	7.51	38.60	8.06
	15	25.20	3.96	29.70	4.75	34.20	5.57	35.90	6.00	36.20	6.95	36.60	7.74	37.50	8.99
	20	25.20	4.16	29.70	5.27	33.80	6.38	34.80	6.41	34.60	7.08	35.50	8.31	36.30	9.27
	25	25.20	5.00	29.70	6.32	32.80	7.20	33.60	7.23	33.50	8.00	34.40	8.80	35.10	9.96
	30	25.20	5.88	29.70	7.53	31.50	8.06	31.80	8.06	32.30	8.89	32.20	9.77	33.90	10.53
	35	25.20	6.97	29.40	8.78	30.80	8.87	30.70	8.91	31.20	9.85	32.10	10.86	32.80	11.42
	41	25.20	7.94	29.20	9.46	29.20	9.55	29.70	9.61	30.00	10.62	31.00	11.84	31.40	12.46
	43	25.20	8.61	28.70	9.98	28.60	10.87	29.10	11.07	29.30	12.29	30.40	13.65	30.50	14.40
120%	-5	23.40	3.34	27.40	3.93	31.60	4.35	33.70	4.92	35.70	5.85	37.60	6.88	38.40	7.69
	0	23.40	3.35	27.40	3.94	31.60	4.38	33.70	4.95	35.70	5.89	37.60	6.92	38.40	7.74
	5	23.40	3.37	27.40	3.96	31.60	4.43	33.70	5.00	35.70	5.95	37.60	6.98	38.40	7.81
	10	23.40	3.45	27.40	4.16	31.60	4.87	33.70	5.24	35.70	6.15	37.20	7.27	37.90	7.70
	15	23.40	3.61	27.40	4.34	31.60	5.12	33.70	5.47	35.20	6.31	35.90	7.62	36.70	8.23
	20	23.40	3.78	27.40	4.69	31.60	5.77	33.70	6.35	34.10	7.03	34.80	7.73	35.60	8.84
	25	23.40	4.46	27.40	5.63	31.60	6.92	32.60	7.18	33.00	7.93	33.80	8.75	34.40	9.18
	30	23.40	5.19	27.40	6.68	30.80	7.97	31.30	8.02	31.70	8.87	32.40	9.75	33.30	10.26
	35	23.40	6.24	27.40	7.88	30.20	8.81	30.20	8.85	30.60	9.79	31.40	10.77	32.10	11.32
	41	23.40	7.18	27.40	9.25	28.60	9.46	29.20	9.47	29.60	10.42	29.90	11.75	30.70	12.44
	43	23.40	7.70	27.40	9.60	28.00	10.63	28.60	10.87	28.90	12.03	29.20	13.54	30.20	14.34
110%	-5	21.50	2.96	25.10	3.57	29.00	4.14	30.90	4.48	32.70	5.23	37.00	6.42	37.70	7.09
	0	21.50	2.97	25.10	3.58	29.00	4.17	30.90	4.51	32.70	5.27	37.00	6.46	37.70	7.14
	5	21.50	2.99	25.10	3.60	29.00	4.22	30.90	4.56	32.70	5.33	37.00	6.52	37.70	7.21
	10	21.50	3.13	25.10	3.77	29.00	4.42	30.90	4.75	32.70	5.60	36.50	6.63	37.20	7.17
	15	21.50	3.26	25.10	3.93	29.00	4.62	30.90	4.93	32.70	5.85	35.30	6.74	36.10	7.32
	20	21.50	3.43	25.10	4.15	29.00	5.09	30.90	5.57	32.70	6.70	34.20	7.69	34.90	8.06
	25	21.50	3.96	25.10	4.97	29.00	6.09	30.90	6.47	32.30	7.32	33.00	8.36	33.70	9.52
	30	21.50	4.71	25.10	5.91	29.00	7.24	30.90	7.87	30.90	8.80	31.90	9.68	32.60	10.16
	35	21.50	5.53	25.10	6.95	29.00	8.55	29.70	8.79	30.10	9.72	30.70	10.70	31.40	11.23
	41	21.50	6.47	25.10	8.15	28.30	9.38	28.70	9.40	29.00	10.22	29.30	11.70	30.20	12.27
	43	21.50	6.97	25.10	8.67	27.60	9.96	28.10	10.48	28.30	11.96	28.60	13.21	29.50	13.90

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DC INVERTER MRV III-S

AV10NMSETA															Cooling mode
Capacity factor	Outdoor temp. (℃ DB)	Indoor temp.(℃ WB)													
		14(℃)		16(℃)		18(℃)		19(℃)		20(℃)		22(℃)		24(℃)	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
100%	-5	19.40	2.76	22.80	3.20	26.30	3.76	28.00	4.00	29.70	4.68	33.20	5.80	38.30	6.75
	0	19.40	2.77	22.80	3.21	26.30	3.79	28.00	4.03	29.70	4.72	33.20	5.84	38.30	6.80
	5	19.40	2.79	22.80	3.23	26.30	3.84	28.00	4.08	29.70	4.78	33.20	5.90	38.30	6.87
	10	19.40	2.81	22.80	3.39	26.30	3.96	28.00	4.27	29.70	5.01	33.20	6.19	37.70	6.98
	15	19.40	2.93	22.80	3.54	26.30	4.15	28.00	4.46	29.70	5.24	33.20	6.49	37.00	7.13
	20	19.40	3.08	22.80	3.70	26.30	4.42	28.00	4.84	29.70	5.81	33.20	7.49	36.40	8.00
	25	19.40	3.48	22.80	4.34	26.30	5.31	28.00	5.82	29.70	6.98	32.40	7.82	35.10	9.05
	30	19.40	4.11	22.80	5.16	26.30	6.30	28.00	6.91	29.70	8.25	31.20	9.60	33.50	10.09
	35	19.40	4.84	22.80	6.09	26.30	7.44	28.00	8.00	29.50	9.65	30.10	10.62	31.90	11.13
	41	19.40	5.68	22.80	7.06	26.30	8.70	28.00	9.17	28.40	10.57	29.00	11.61	29.60	12.21
	43	19.40	6.18	22.80	7.58	26.30	9.22	28.00	10.07	27.70	11.16	28.50	12.21	28.90	12.84
90%	-5	17.60	2.35	20.60	2.84	23.70	3.29	25.30	3.53	26.90	4.14	29.90	5.17	33.00	6.01
	0	17.60	2.36	20.60	2.85	23.70	3.32	25.30	3.56	26.90	4.18	29.90	5.21	33.00	6.06
	5	17.60	2.38	20.60	2.87	23.70	3.37	25.30	3.61	26.90	4.24	29.90	5.27	33.00	6.13
	10	17.60	2.51	20.60	3.01	23.70	3.52	25.30	3.78	26.90	4.46	29.90	5.50	33.00	6.41
	15	17.60	2.63	20.60	3.14	23.70	3.67	25.30	3.96	26.90	4.66	29.90	5.74	33.00	6.69
	20	17.60	2.75	20.60	3.28	23.70	3.86	25.30	4.18	26.90	4.99	29.90	6.40	33.00	7.72
	25	17.60	3.02	20.60	3.77	23.70	4.57	25.30	5.00	26.90	6.00	29.90	7.69	32.40	8.97
	30	17.60	3.58	20.60	4.46	23.70	5.44	25.30	5.94	26.90	7.12	29.90	9.18	31.30	9.99
	35	17.60	4.22	20.60	5.25	23.70	6.39	25.30	7.00	26.90	8.40	29.50	10.53	30.10	11.04
	41	17.60	4.92	20.60	6.15	23.70	7.50	25.30	7.71	26.90	9.84	28.20	11.52	29.00	12.08
	43	17.60	5.44	20.60	6.50	23.70	7.99	25.30	8.56	26.90	10.62	27.00	11.97	28.40	12.71
80%	-5	15.80	2.10	18.20	2.51	21.20	2.87	22.50	3.09	23.80	3.62	26.60	4.51	29.30	5.23
	0	15.80	2.11	18.20	2.52	21.20	2.90	22.50	3.12	23.80	3.66	26.60	4.55	29.30	5.28
	5	15.80	2.13	18.20	2.54	21.20	2.95	22.50	3.17	23.80	3.72	26.60	4.61	29.30	5.35
	10	15.80	2.22	18.20	2.64	21.20	3.08	22.50	3.31	23.80	3.91	26.60	4.83	29.30	5.61
	15	15.80	2.31	18.20	2.76	21.20	3.23	22.50	3.46	23.80	4.08	26.60	5.05	29.30	5.88
	20	15.80	2.41	18.20	2.88	21.20	3.37	22.50	3.63	23.80	4.28	26.60	5.39	29.30	6.73
	25	15.80	2.61	18.20	3.22	21.20	3.89	22.50	4.24	23.80	5.08	26.60	6.47	29.30	8.34
	30	15.80	3.08	18.20	3.81	21.20	4.62	22.50	5.04	23.80	6.01	26.60	7.69	29.30	9.25
	35	15.80	3.63	18.20	4.49	21.20	5.44	22.50	5.94	23.80	7.10	26.60	9.07	29.30	10.90
	41	15.80	4.33	18.20	5.24	21.20	6.33	22.50	6.94	23.80	8.33	26.10	10.60	28.10	11.99
	43	15.80	5.00	18.20	5.68	21.20	6.71	22.50	7.53	23.80	9.15	24.90	10.95	27.50	12.36

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DC INVERTER MRV III-S

AV10NMSETA															Cooling mode
Capacity factor	Outdoor temp. (℃ DB)	Indoor temp.(℃ WB)													
		14(℃)		16(℃)		18(℃)		19(℃)		20(℃)		22(℃)		24(℃)	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
70%	-5	13.60	1.81	16.20	2.16	18.60	2.47	19.60	2.65	20.80	3.12	23.20	3.87	25.70	5.15
	0	13.60	1.82	16.20	2.17	18.60	2.50	19.60	2.68	20.80	3.16	23.20	3.91	25.70	5.20
	5	13.60	1.84	16.20	2.19	18.60	2.55	19.60	2.73	20.80	3.22	23.20	3.97	25.70	5.27
	10	13.60	1.93	16.20	2.28	18.60	2.67	19.60	2.85	20.80	3.36	23.20	4.15	25.70	4.84
	15	13.60	2.00	16.20	2.38	18.60	2.78	19.60	2.99	20.80	3.51	23.20	4.34	25.70	5.04
	20	13.60	2.10	16.20	2.49	18.60	2.92	19.60	3.13	20.80	3.67	23.20	4.54	25.70	5.35
	25	13.60	2.20	16.20	2.70	18.60	3.25	19.60	3.54	20.80	4.23	23.20	5.36	25.70	6.41
	30	13.60	2.61	16.20	3.20	18.60	3.86	19.60	4.21	20.80	5.01	23.20	6.36	25.70	7.60
	35	13.60	3.08	16.20	3.77	18.60	4.52	19.60	4.93	20.80	5.88	23.20	7.49	25.70	8.97
	41	13.60	3.58	16.20	4.34	18.60	5.28	19.60	5.68	20.80	6.88	23.20	8.75	25.70	10.51
	43	13.60	3.78	16.20	4.56	18.60	5.85	19.60	5.82	20.80	7.42	22.00	9.51	25.10	11.45
60%	-5	11.80	1.55	13.80	1.84	15.90	2.08	16.80	2.24	17.80	2.61	19.90	3.23	22.00	3.75
	0	11.80	1.56	13.80	1.85	15.90	2.11	16.80	2.27	17.80	2.65	19.90	3.27	22.00	3.80
	5	11.80	1.58	13.80	1.87	15.90	2.16	16.80	2.32	17.80	2.71	19.90	3.33	22.00	3.87
	10	11.80	1.64	13.80	1.94	15.90	2.26	16.80	2.41	17.80	2.84	19.90	3.48	22.00	4.06
	15	11.80	1.72	13.80	2.02	15.90	2.35	16.80	2.52	17.80	2.96	19.90	3.64	22.00	4.25
	20	11.80	1.78	13.80	2.11	15.90	2.46	16.80	2.64	17.80	3.09	19.90	3.83	22.00	4.44
	25	11.80	1.87	13.80	2.23	15.90	2.67	16.80	2.88	17.80	3.44	19.90	4.34	22.00	5.18
	30	11.80	2.17	13.80	2.66	15.90	3.17	16.80	3.43	17.80	4.08	19.90	5.14	22.00	6.13
	35	11.80	2.55	13.80	3.11	15.90	3.70	16.80	4.02	17.80	4.79	19.90	6.05	22.00	7.23
	41	11.80	2.98	13.80	3.61	15.90	4.31	16.80	4.69	17.80	5.60	19.90	7.07	22.00	8.46
	43	11.80	3.22	13.80	3.67	15.90	4.68	16.80	5.21	17.80	6.08	19.90	7.56	22.00	9.20
50%	-5	9.76	1.29	11.50	1.55	13.20	1.70	14.00	1.79	14.80	2.12	16.60	2.63	18.30	3.05
	0	9.76	1.30	11.50	1.56	13.20	1.73	14.00	1.82	14.80	2.16	16.60	2.67	18.30	3.10
	5	9.76	1.32	11.50	1.58	13.20	1.78	14.00	1.87	14.80	2.22	16.60	2.73	18.30	3.17
	10	9.76	1.37	11.50	1.61	13.20	1.87	14.00	1.99	14.80	2.32	16.60	2.86	18.30	3.32
	15	9.76	1.43	11.50	1.66	13.20	1.94	14.00	2.08	14.80	2.44	16.60	2.99	18.30	3.47
	20	9.76	1.49	11.50	1.76	13.20	2.02	14.00	2.17	14.80	2.54	16.60	3.13	18.30	3.62
	25	9.76	1.55	11.50	1.82	13.20	2.13	14.00	2.29	14.80	2.72	16.60	3.41	18.30	4.04
	30	9.76	1.78	11.50	2.14	13.20	2.52	14.00	2.73	14.80	3.22	16.60	4.06	18.30	4.80
	35	9.76	2.08	11.50	2.51	13.20	2.96	14.00	3.20	14.80	3.79	16.60	4.76	18.30	5.63
	41	9.76	2.43	11.50	2.75	13.20	3.45	14.00	3.74	14.80	4.43	16.60	5.54	18.30	6.58
	43	9.76	2.67	11.50	2.99	13.20	3.75	14.00	4.02	14.80	4.74	16.60	6.01	18.30	7.13

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DC INVERTER MRV III-S

AV12NMSETA															Cooling mode
Capacity factor	Outdoor temp. (℃ DB)	Indoor temp.(℃ WB)													
		14(℃)		16(℃)		18(℃)		19(℃)		20(℃)		22(℃)		24(℃)	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
130%	-5	30.14	4.39	35.52	5.30	40.90	6.16	43.30	6.97	44.73	7.56	45.57	7.78	46.76	8.48
	0	30.14	4.40	35.52	5.31	40.90	6.19	43.30	7.00	44.73	7.60	45.57	7.82	46.76	8.53
	5	30.14	4.42	35.52	5.33	40.9	6.24	43.3	7.05	44.73	7.66	45.57	7.88	46.76	8.6
	10	30.14	4.64	35.52	5.59	40.9	6.54	43.77	7.08	44.13	7.72	45.21	8.26	46.17	8.62
	15	30.14	4.86	35.52	5.83	40.9	6.84	42.94	7.36	43.3	8.34	43.77	8.52	44.85	9.61
	20	30.14	5.11	35.52	6.47	40.42	7.83	41.62	7.87	41.38	8.5	42.46	9.14	43.41	9.91
	25	30.14	6.13	35.52	7.75	39.23	8.83	40.19	8.87	40.07	9.6	41.14	9.68	41.98	10.64
	30	30.14	7.21	35.52	9.24	37.67	9.9	38.03	9.9	38.63	10.66	38.51	10.74	40.54	11.25
	35	30.14	8.55	35.16	10.77	36.84	10.88	36.72	10.94	37.32	11.83	38.39	11.95	39.23	12.2
	41	30.14	9.75	34.92	11.61	34.92	11.72	35.52	11.8	35.88	12.75	37.08	13.03	37.55	13.32
	43	30.14	10.57	34.33	12.25	34.21	13.34	34.8	13.59	35.04	14.75	36.36	15.01	36.48	15.4
120%	-5	27.99	4.11	32.77	4.83	37.79	5.36	40.31	6.05	42.70	7.04	44.97	7.58	45.93	8.23
	0	27.99	4.12	32.77	4.84	37.79	5.39	40.31	6.08	42.70	7.08	44.97	7.62	45.93	8.28
	5	27.99	4.14	32.77	4.86	37.79	5.44	40.31	6.13	42.7	7.14	44.97	7.68	45.93	8.35
	10	27.99	4.23	32.77	5.11	37.79	5.98	40.31	6.43	42.7	7.38	44.49	8	45.33	8.23
	15	27.99	4.44	32.77	5.33	37.79	6.28	40.31	6.71	42.1	7.58	42.94	8.38	43.89	8.8
	20	27.99	4.64	32.77	5.76	37.79	7.08	40.31	7.79	40.78	8.44	41.62	8.5	42.58	9.45
	25	27.99	5.48	32.77	6.91	37.79	8.5	38.99	8.82	39.47	9.52	40.42	9.62	41.14	9.81
	30	27.99	6.37	32.77	8.2	36.84	9.78	37.43	9.84	37.91	10.64	38.75	10.72	39.83	10.97
	35	27.99	7.66	32.77	9.67	36.12	10.81	36.12	10.87	36.6	11.74	37.55	11.85	38.39	12.1
	41	27.99	8.82	32.77	11.35	34.21	11.61	34.92	11.63	35.4	12.51	35.76	12.93	36.72	13.3
	43	27.99	9.45	32.77	11.78	33.49	13.05	34.21	13.34	34.56	14.43	34.92	14.89	36.12	15.33
110%	-5	25.71	3.64	30.02	4.39	34.68	5.10	36.96	5.51	39.11	6.29	44.25	7.08	45.09	7.58
	0	25.71	3.65	30.02	4.40	34.68	5.13	36.96	5.54	39.11	6.33	44.25	7.12	45.09	7.63
	5	25.71	3.67	30.02	4.42	34.68	5.18	36.96	5.59	39.11	6.39	44.25	7.18	45.09	7.7
	10	25.71	3.84	30.02	4.62	34.68	5.42	36.96	5.83	39.11	6.71	43.65	7.3	44.49	7.66
	15	25.71	4.01	30.02	4.83	34.68	5.67	36.96	6.06	39.11	7.01	42.22	7.42	43.18	7.83
	20	25.71	4.21	30.02	5.09	34.68	6.24	36.96	6.84	39.11	8.04	40.9	8.46	41.74	8.62
	25	25.71	4.86	30.02	6.09	34.68	7.47	36.96	7.94	38.63	8.78	39.47	9.2	40.31	10.18
	30	25.71	5.78	30.02	7.25	34.68	8.89	36.96	9.65	36.96	10.56	38.15	10.64	38.99	10.87
	35	25.71	6.78	30.02	8.54	34.68	10.49	35.52	10.79	36	11.66	36.72	11.76	37.55	12
	41	25.71	7.94	30.02	10.01	33.85	11.52	34.33	11.54	34.68	12.27	35.04	12.87	36.12	13.12
	43	25.71	8.55	30.02	10.64	33.01	12.23	33.61	12.86	33.85	14.35	34.21	14.53	35.28	14.86

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DC INVERTER MRV III-S

AV12NMSETA															Cooling mode
Capacity factor	Outdoor temp. (℃ DB)	Indoor temp.(℃ WB)													
		14(℃)		16(℃)		18(℃)		19(℃)		20(℃)		22(℃)		24(℃)	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
100%	-5	23.20	3.40	27.27	3.94	31.45	4.64	33.50	4.93	35.52	5.63	39.71	6.39	45.81	7.22
	0	23.20	3.41	27.27	3.95	31.45	4.67	33.50	4.96	35.52	5.67	39.71	6.43	45.81	7.27
	5	23.2	3.43	27.27	3.97	31.45	4.72	33.5	5.01	35.52	5.73	39.71	6.49	45.81	7.34
	10	23.2	3.45	27.27	4.16	31.45	4.86	33.5	5.24	35.52	6.01	39.71	6.81	45.09	7.46
	15	23.2	3.6	27.27	4.34	31.45	5.09	33.5	5.48	35.52	6.29	39.71	7.14	44.25	7.62
	20	23.2	3.78	27.27	4.55	31.45	5.42	33.5	5.95	35.52	6.97	39.71	8.24	43.53	8.56
	25	23.2	4.27	27.27	5.33	31.45	6.52	33.5	7.14	35.52	8.38	38.75	8.6	41.98	9.67
	30	23.2	5.05	27.27	6.34	31.45	7.73	33.5	8.48	35.52	9.9	37.32	10.56	40.07	10.79
	35	23.2	5.95	27.27	7.47	31.45	9.13	33.5	9.82	35.28	11.58	36	11.68	38.15	11.9
	41	23.2	6.97	27.27	8.67	31.45	10.68	33.5	11.26	33.97	12.69	34.68	12.77	35.4	13.06
	43	23.2	7.59	27.27	9.3	31.45	11.31	33.5	12.36	33.13	13.39	34.09	13.43	34.56	13.72
90%	-5	21.05	2.90	24.64	3.49	28.35	4.06	30.26	4.36	32.17	4.99	35.76	5.69	39.47	6.43
	0	21.05	2.91	24.64	3.50	28.35	4.09	30.26	4.39	32.17	5.03	35.76	5.73	39.47	6.48
	5	21.05	2.93	24.64	3.52	28.35	4.14	30.26	4.44	32.17	5.09	35.76	5.79	39.47	6.55
	10	21.05	3.08	24.64	3.69	28.35	4.32	30.26	4.64	32.17	5.35	35.76	6.05	39.47	6.85
	15	21.05	3.22	24.64	3.86	28.35	4.51	30.26	4.86	32.17	5.59	35.76	6.31	39.47	7.16
	20	21.05	3.37	24.64	4.03	28.35	4.73	30.26	5.13	32.17	5.99	35.76	7.03	39.47	8.25
	25	21.05	3.71	24.64	4.62	28.35	5.61	30.26	6.13	32.17	7.2	35.76	8.46	38.75	9.59
	30	21.05	4.4	24.64	5.48	28.35	6.67	30.26	7.29	32.17	8.54	35.76	10.1	37.43	10.68
	35	21.05	5.18	24.64	6.45	28.35	7.85	30.26	8.59	32.17	10.08	35.28	11.58	36	11.8
	41	21.05	6.04	24.64	7.55	28.35	9.21	30.26	9.47	32.17	11.8	33.73	12.67	34.68	12.91
	43	21.05	6.67	24.64	7.98	28.35	9.8	30.26	10.51	32.17	12.75	32.29	13.17	33.97	13.58
80%	-5	18.90	2.58	21.77	3.08	25.36	3.54	26.91	3.82	28.46	4.37	31.81	4.97	35.04	5.60
	0	18.90	2.59	21.77	3.09	25.36	3.57	26.91	3.85	28.46	4.41	31.81	5.01	35.04	5.65
	5	18.9	2.61	21.77	3.11	25.36	3.62	26.91	3.9	28.46	4.47	31.81	5.07	35.04	5.72
	10	18.9	2.72	21.77	3.24	25.36	3.78	26.91	4.06	28.46	4.69	31.81	5.31	35.04	6
	15	18.9	2.83	21.77	3.39	25.36	3.97	26.91	4.25	28.46	4.89	31.81	5.55	35.04	6.28
	20	18.9	2.96	21.77	3.54	25.36	4.14	26.91	4.45	28.46	5.13	31.81	5.93	35.04	7.2
	25	18.9	3.21	21.77	3.95	25.36	4.77	26.91	5.2	28.46	6.09	31.81	7.12	35.04	8.92
	30	18.9	3.78	21.77	4.68	25.36	5.67	26.91	6.19	28.46	7.22	31.81	8.46	35.04	9.89
	35	18.9	4.45	21.77	5.52	25.36	6.67	26.91	7.29	28.46	8.52	31.81	9.98	35.04	11.66
	41	18.9	5.31	21.77	6.43	25.36	7.77	26.91	8.52	28.46	10	31.22	11.66	33.61	12.81
	43	18.9	6.13	21.77	6.97	25.36	8.24	26.91	9.24	28.46	10.98	29.78	12.05	32.89	13.22

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DC INVERTER MRV III-S

AV12NMSETA															Cooling mode
Capacity factor	Outdoor temp. (℃ DB)	Indoor temp.(℃ WB)													
		14(℃)		16(℃)		18(℃)		19(℃)		20(℃)		22(℃)		24(℃)	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
70%	-5	16.27	2.23	19.38	2.65	22.25	3.05	23.44	3.27	24.88	3.77	27.75	4.27	30.74	5.52
	0	16.27	2.24	19.38	2.66	22.25	3.08	23.44	3.30	24.88	3.81	27.75	4.31	30.74	5.57
	5	16.27	2.26	19.38	2.68	22.25	3.13	23.44	3.35	24.88	3.87	27.75	4.37	30.74	5.64
	10	16.27	2.37	19.38	2.8	22.25	3.28	23.44	3.5	24.88	4.03	27.75	4.57	30.74	5.17
	15	16.27	2.46	19.38	2.93	22.25	3.41	23.44	3.67	24.88	4.21	27.75	4.77	30.74	5.39
	20	16.27	2.57	19.38	3.06	22.25	3.58	23.44	3.84	24.88	4.41	27.75	4.99	30.74	5.72
	25	16.27	2.7	19.38	3.32	22.25	3.99	23.44	4.34	24.88	5.07	27.75	5.89	30.74	6.85
	30	16.27	3.21	19.38	3.93	22.25	4.73	23.44	5.16	24.88	6.01	27.75	6.99	30.74	8.13
	35	16.27	3.78	19.38	4.62	22.25	5.55	23.44	6.06	24.88	7.05	27.75	8.24	30.74	9.59
	41	16.27	4.4	19.38	5.33	22.25	6.49	23.44	6.97	24.88	8.26	27.75	9.62	30.74	11.23
	43	16.27	4.64	19.38	5.59	22.25	7.18	23.44	7.14	24.88	8.9	26.31	10.46	30.02	12.24
60%	-5	14.11	1.91	16.50	2.26	19.02	2.57	20.09	2.77	21.29	3.15	23.80	3.57	26.31	4.02
	0	14.11	1.92	16.50	2.27	19.02	2.60	20.09	2.80	21.29	3.19	23.80	3.61	26.31	4.07
	5	14.11	1.94	16.5	2.29	19.02	2.65	20.09	2.85	21.29	3.25	23.8	3.67	26.31	4.14
	10	14.11	2.01	16.5	2.39	19.02	2.78	20.09	2.96	21.29	3.41	23.8	3.83	26.31	4.34
	15	14.11	2.11	16.5	2.48	19.02	2.89	20.09	3.09	21.29	3.55	23.8	4.01	26.31	4.54
	20	14.11	2.18	16.5	2.59	19.02	3.02	20.09	3.24	21.29	3.71	23.8	4.21	26.31	4.74
	25	14.11	2.29	16.5	2.74	19.02	3.28	20.09	3.54	21.29	4.13	23.8	4.77	26.31	5.53
	30	14.11	2.67	16.5	3.26	19.02	3.9	20.09	4.21	21.29	4.89	23.8	5.65	26.31	6.55
	35	14.11	3.13	16.5	3.82	19.02	4.55	20.09	4.94	21.29	5.75	23.8	6.65	26.31	7.72
	41	14.11	3.65	16.5	4.44	19.02	5.29	20.09	5.76	21.29	6.71	23.8	7.78	26.31	9.04
	43	14.11	3.95	16.5	4.51	19.02	5.74	20.09	6.39	21.29	7.3	23.8	8.32	26.31	9.83
50%	-5	11.67	1.59	13.75	1.91	15.79	2.10	16.74	2.21	17.70	2.57	19.85	2.91	21.89	3.27
	0	11.67	1.60	13.75	1.92	15.79	2.13	16.74	2.24	17.70	2.61	19.85	2.95	21.89	3.32
	5	11.67	1.62	13.75	1.94	15.79	2.18	16.74	2.29	17.7	2.67	19.85	3.01	21.89	3.39
	10	11.67	1.68	13.75	1.98	15.79	2.29	16.74	2.44	17.7	2.79	19.85	3.15	21.89	3.55
	15	11.67	1.75	13.75	2.03	15.79	2.39	16.74	2.55	17.7	2.93	19.85	3.29	21.89	3.71
	20	11.67	1.83	13.75	2.16	15.79	2.48	16.74	2.67	17.7	3.05	19.85	3.45	21.89	3.87
	25	11.67	1.9	13.75	2.24	15.79	2.61	16.74	2.81	17.7	3.27	19.85	3.75	21.89	4.32
	30	11.67	2.18	13.75	2.63	15.79	3.09	16.74	3.35	17.7	3.87	19.85	4.47	21.89	5.13
	35	11.67	2.55	13.75	3.08	15.79	3.63	16.74	3.93	17.7	4.55	19.85	5.23	21.89	6.02
	41	11.67	2.98	13.75	3.37	15.79	4.23	16.74	4.58	17.7	5.31	19.85	6.09	21.89	7.03
	43	11.67	3.28	13.75	3.67	15.79	4.6	16.74	4.94	17.7	5.69	19.85	6.61	21.89	7.62

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DC INVERTER MRV III-S

AV08NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
130%	-14.7	-15	16.54	4.10	15.86	4.27	15.28	4.79	14.45	6.13	13.77	6.72	13.19	6.29
	-12.6	-13	17.47	4.51	16.81	4.62	16.25	5.15	15.44	6.50	14.78	7.04	14.22	6.61
	-10.5	-11	18.30	4.92	17.67	4.97	17.14	5.51	16.36	6.87	15.73	7.37	15.20	6.94
	-9.5	-10	18.82	5.87	18.21	5.79	17.70	6.35	16.94	7.73	16.33	8.13	15.82	7.69
	-8.5	-9.1	19.24	6.69	18.65	6.49	18.16	7.08	17.42	8.46	16.83	8.78	16.34	8.34
	-7	-7.6	19.86	7.50	19.29	7.19	18.82	7.80	18.10	9.19	17.53	9.43	17.06	8.99
	-5	-5.6	20.80	7.91	20.25	7.54	19.80	8.16	19.10	9.56	18.55	9.78	18.10	9.32
	-3	-3.7	21.63	7.09	21.11	6.84	20.69	7.44	20.02	8.83	19.50	9.10	19.08	8.67
	0	-0.7	22.98	6.41	22.50	6.26	22.12	6.83	21.49	8.22	21.01	8.56	20.63	8.13
	3	2.2	24.44	5.60	23.98	5.56	23.62	6.11	23.01	7.48	22.55	7.91	22.19	7.48
	5	4.1	25.17	5.73	24.74	5.67	24.41	6.23	23.83	7.60	23.40	8.02	23.07	7.59
	7	6	26.79	6.06	26.38	5.95	26.07	6.52	25.51	7.90	25.10	8.28	24.79	7.85
	9	7.9	26.83	6.28	26.46	6.14	26.19	6.71	25.67	8.09	25.30	8.45	25.03	8.02
	11	9.8	27.77	6.41	27.46	6.26	27.25	6.83	26.79	8.22	26.48	8.56	26.27	8.13
	13	11.8	28.60	6.47	28.32	6.31	28.14	6.88	27.71	8.26	27.43	8.60	27.25	8.17
	15	13.7	29.43	6.37	29.18	6.22	29.03	6.80	28.63	8.18	28.38	8.53	28.23	8.09
	19	14.2	29.64	6.29	29.42	6.15	29.30	6.73	28.93	8.10	28.71	8.46	28.59	8.03
	21	15	30.06	6.85	29.88	6.05	29.80	6.62	29.47	7.99	29.29	8.36	29.21	7.93
120%	-14.7	-15	16.32	3.98	15.64	4.11	15.06	4.56	14.23	5.79	13.55	6.52	12.97	6.10
	-12.6	-13	17.25	4.38	16.59	4.45	16.03	4.91	15.22	6.13	14.56	6.84	14.00	6.42
	-10.5	-11	18.08	4.77	17.45	4.78	16.92	5.25	16.14	6.48	15.51	7.15	14.98	6.73
	-9.5	-10	18.60	5.70	17.99	5.57	17.48	6.05	16.72	7.29	16.11	7.89	15.60	7.47
	-8.5	-9.1	19.02	6.49	18.43	6.24	17.94	6.74	17.20	7.98	16.61	8.52	16.12	8.10
	-7	-7.6	19.64	7.28	19.07	6.92	18.60	7.42	17.88	8.67	17.31	9.15	16.84	8.73
	-5	-5.6	20.58	7.68	20.03	7.25	19.58	7.77	18.88	9.02	18.33	9.47	17.88	9.05
	-3	-3.7	21.41	6.89	20.89	6.58	20.47	7.08	19.80	8.33	19.28	8.84	18.86	8.42
	0	-0.7	22.76	6.23	22.28	6.02	21.90	6.51	21.27	7.75	20.79	8.31	20.41	7.89
	3	2.2	24.22	5.43	23.76	5.34	23.40	5.82	22.79	7.06	22.33	7.68	21.97	7.26
	5	4.1	24.95	5.57	24.52	5.46	24.19	5.94	23.61	7.17	23.18	7.78	22.85	7.36
	7	6	26.57	5.88	26.16	5.73	25.85	6.21	25.29	7.45	24.88	8.04	24.57	7.62
	9	7.9	26.61	6.09	26.24	5.91	25.97	6.39	25.45	7.63	25.08	8.21	24.81	7.78
	11	9.8	27.55	6.23	27.24	6.02	27.03	6.51	26.57	7.75	26.26	8.31	26.05	7.89
	13	11.8	28.38	6.28	28.10	6.06	27.92	6.56	27.49	7.80	27.21	8.35	27.03	7.93
	15	13.7	29.21	6.19	28.96	5.98	28.81	6.48	28.41	7.72	28.16	8.28	28.01	7.86
	19	14.2	29.42	6.11	29.20	5.92	29.08	6.41	28.71	7.65	28.49	8.22	28.37	7.80
	21	15	29.84	6.65	29.66	5.82	29.58	6.30	29.25	7.54	29.07	8.12	28.99	7.70

Haier

DC INVERTER MRV III-S

AV08NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
110%	-14.7	-15	15.79	3.90	15.11	3.99	14.53	4.39	13.70	5.51	13.02	6.33	12.44	5.98
	-12.6	-13	16.72	4.29	16.06	4.32	15.50	4.72	14.69	5.84	14.03	6.64	13.47	6.29
	-10.5	-11	17.55	4.68	16.92	4.64	16.39	5.05	15.61	6.17	14.98	6.95	14.45	6.60
	-9.5	-10	18.07	5.59	17.46	5.41	16.95	5.82	16.19	6.94	15.58	7.66	15.07	7.32
	-8.5	-9.1	18.49	6.36	17.90	6.06	17.41	6.48	16.67	7.60	16.08	8.27	15.59	7.94
	-7	-7.6	19.11	7.14	18.54	6.71	18.07	7.14	17.35	8.26	16.78	8.88	16.31	8.56
	-5	-5.6	20.05	7.53	19.50	7.04	19.05	7.47	18.35	8.59	17.80	9.19	17.35	8.87
	-3	-3.7	20.88	6.75	20.36	6.39	19.94	6.81	19.27	7.93	18.75	8.58	18.33	8.25
	0	-0.7	22.23	6.10	21.75	5.84	21.37	6.26	20.74	7.38	20.26	8.07	19.88	7.74
	3	2.2	23.69	5.33	23.23	5.19	22.87	5.60	22.26	6.72	21.80	7.46	21.44	7.12
	5	4.1	24.42	5.46	23.99	5.30	23.66	5.71	23.08	6.83	22.65	7.56	22.32	7.22
	7	6	26.04	5.77	25.63	5.56	25.32	5.97	24.76	7.10	24.35	7.80	24.04	7.47
	9	7.9	26.08	5.97	25.71	5.73	25.44	6.15	24.92	7.27	24.55	7.97	24.28	7.63
	11	9.8	27.02	6.10	26.71	5.84	26.50	6.26	26.04	7.38	25.73	8.07	25.52	7.74
	13	11.8	27.85	6.16	27.57	5.89	27.39	6.30	26.96	7.43	26.68	8.11	26.50	7.78
	15	13.7	28.68	6.07	28.43	5.81	28.28	6.23	27.88	7.35	27.63	8.04	27.48	7.70
	19	14.2	28.89	5.99	28.67	5.74	28.55	6.16	28.18	7.28	27.96	7.98	27.84	7.64
	21	15	29.31	6.52	29.13	5.65	29.05	6.06	28.72	7.18	28.54	7.88	28.46	7.55
100%	-14.7	-15	15.47	3.51	14.79	3.66	14.21	3.99	13.38	5.01	12.70	6.21	12.12	5.81
	-12.6	-13	16.40	3.81	15.74	3.96	15.18	4.29	14.37	5.31	13.71	6.51	13.15	6.11
	-10.5	-11	17.23	4.11	16.60	4.26	16.07	4.59	15.29	5.61	14.66	6.81	14.13	6.41
	-9.5	-10	17.75	4.81	17.14	4.96	16.63	5.29	15.87	6.31	15.26	7.51	14.75	7.11
	-8.5	-9.1	18.17	5.41	17.58	5.56	17.09	5.89	16.35	6.91	15.76	8.11	15.27	7.71
	-7	-7.6	18.79	6.01	18.22	6.16	17.75	6.49	17.03	7.51	16.46	8.71	15.99	8.31
	-5	-5.6	19.73	6.31	19.18	6.46	18.73	6.79	18.03	7.81	17.48	9.01	17.03	8.61
	-3	-3.7	20.56	5.71	20.04	5.86	19.62	6.19	18.95	7.21	18.43	8.41	18.01	8.01
	0	-0.7	21.91	5.21	21.43	5.36	21.05	5.69	20.42	6.71	19.94	7.91	19.56	7.51
	3	2.2	23.37	4.61	22.91	4.76	22.55	5.09	21.94	6.11	21.48	7.31	21.12	6.91
	5	4.1	24.10	4.71	23.67	4.86	23.34	5.19	22.76	6.21	22.33	7.41	22.00	7.01
	7	6	25.72	4.95	25.31	5.10	25.00	5.43	24.44	6.45	24.03	7.65	23.72	7.25
	9	7.9	25.76	5.11	25.39	5.26	25.12	5.59	24.60	6.61	24.23	7.81	23.96	7.41
	11	9.8	26.70	5.21	26.39	5.36	26.18	5.69	25.72	6.71	25.41	7.91	25.20	7.51
	13	11.8	27.53	5.25	27.25	5.40	27.07	5.73	26.64	6.75	26.36	7.95	26.18	7.55
	15	13.7	28.36	5.18	28.11	5.33	27.96	5.66	27.56	6.68	27.31	7.88	27.16	7.48
	19	14.2	28.57	5.12	28.35	5.27	28.23	5.60	27.86	6.62	27.64	7.82	27.52	7.42
	21	15	28.99	5.03	28.81	5.18	28.73	5.51	28.40	6.53	28.22	7.73	28.14	7.33

Haier

DC INVERTER MRV III-S

AV08NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
90%	-14.7	-15	15.18	3.37	14.50	3.51	13.92	3.83	13.09	4.81	12.41	5.96	11.83	5.58
	-12.6	-13	16.11	3.66	15.45	3.80	14.89	4.12	14.08	5.10	13.42	6.25	12.86	5.87
	-10.5	-11	16.94	3.95	16.31	4.09	15.78	4.41	15.00	5.39	14.37	6.54	13.84	6.15
	-9.5	-10	17.46	4.62	16.85	4.76	16.34	5.08	15.58	6.06	14.97	7.21	14.46	6.83
	-8.5	-9.1	17.88	5.19	17.29	5.34	16.80	5.65	16.06	6.63	15.47	7.79	14.98	7.40
	-7	-7.6	18.50	5.77	17.93	5.91	17.46	6.23	16.74	7.21	16.17	8.36	15.70	7.98
	-5	-5.6	19.44	6.06	18.89	6.20	18.44	6.52	17.74	7.50	17.19	8.65	16.74	8.27
	-3	-3.7	20.27	5.48	19.75	5.63	19.33	5.94	18.66	6.92	18.14	8.07	17.72	7.69
	0	-0.7	21.62	5.00	21.14	5.15	20.76	5.46	20.13	6.44	19.65	7.59	19.27	7.21
	3	2.2	23.08	4.43	22.62	4.57	22.26	4.89	21.65	5.87	21.19	7.02	20.83	6.63
	5	4.1	23.81	4.52	23.38	4.67	23.05	4.98	22.47	5.96	22.04	7.11	21.71	6.73
	7	6	25.43	4.75	25.02	4.90	24.71	5.21	24.15	6.19	23.74	7.34	23.43	6.96
	9	7.9	25.47	4.91	25.10	5.05	24.83	5.37	24.31	6.35	23.94	7.50	23.67	7.11
	11	9.8	26.41	5.00	26.10	5.15	25.89	5.46	25.43	6.44	25.12	7.59	24.91	7.21
	13	11.8	27.24	5.04	26.96	5.18	26.78	5.50	26.35	6.48	26.07	7.63	25.89	7.25
	15	13.7	28.07	4.97	27.82	5.12	27.67	5.43	27.27	6.41	27.02	7.56	26.87	7.18
	19	14.2	28.28	4.92	28.06	5.06	27.94	5.38	27.57	6.36	27.35	7.51	27.23	7.12
	21	15	28.70	4.83	28.52	4.97	28.44	5.29	28.11	6.27	27.93	7.42	27.85	7.04
80%	-14.7	-15	14.82	3.23	14.14	3.37	13.56	3.71	12.73	4.61	12.05	5.65	11.47	5.35
	-12.6	-13	15.75	3.51	15.09	3.64	14.53	3.99	13.72	4.89	13.06	5.92	12.50	5.62
	-10.5	-11	16.58	3.78	15.95	3.92	15.42	4.27	14.64	5.16	14.01	6.20	13.48	5.90
	-9.5	-10	17.10	4.43	16.49	4.56	15.98	4.92	15.22	5.81	14.61	6.83	14.10	6.54
	-8.5	-9.1	17.52	4.98	16.93	5.12	16.44	5.48	15.70	6.36	15.11	7.38	14.62	7.09
	-7	-7.6	18.14	5.53	17.57	5.67	17.10	6.04	16.38	6.91	15.81	7.93	15.34	7.65
	-5	-5.6	19.08	5.81	18.53	5.94	18.08	6.31	17.38	7.19	16.83	8.20	16.38	7.92
	-3	-3.7	19.91	5.25	19.39	5.39	18.97	5.76	18.30	6.63	17.78	7.65	17.36	7.37
	0	-0.7	21.26	4.79	20.78	4.93	20.40	5.29	19.77	6.17	19.29	7.20	18.91	6.91
	3	2.2	22.72	4.24	22.26	4.38	21.90	4.73	21.29	5.62	20.83	6.65	20.47	6.36
	5	4.1	23.45	4.33	23.02	4.47	22.69	4.83	22.11	5.71	21.68	6.74	21.35	6.45
	7	6	25.07	4.55	24.66	4.69	24.35	5.05	23.79	5.93	23.38	6.96	23.07	6.67
	9	7.9	25.11	4.70	24.74	4.84	24.47	5.20	23.95	6.08	23.58	7.11	23.31	6.82
	11	9.8	26.05	4.79	25.74	4.93	25.53	5.29	25.07	6.17	24.76	7.20	24.55	6.91
	13	11.8	26.88	4.83	26.60	4.97	26.42	5.33	25.99	6.21	25.71	7.23	25.53	6.95
	15	13.7	27.71	4.77	27.46	4.90	27.31	5.26	26.91	6.15	26.66	7.17	26.51	6.88
	19	14.2	27.92	4.71	27.70	4.85	27.58	5.21	27.21	6.09	26.99	7.12	26.87	6.83
	21	15	28.34	4.63	28.16	4.77	28.08	5.12	27.75	6.01	27.57	7.03	27.49	6.74

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DC INVERTER MRV III-S

AV08NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
70%	-14.7	-15	14.33	3.12	13.65	3.26	13.07	3.71	12.24	4.56	11.56	5.71	10.98	5.35
	-12.6	-13	15.26	3.39	14.60	3.52	14.04	3.99	13.23	4.83	12.57	5.99	12.01	5.62
	-10.5	-11	16.09	3.66	15.46	3.79	14.93	4.27	14.15	5.11	13.52	6.27	12.99	5.90
	-9.5	-10	16.61	4.28	16.00	4.41	15.49	4.92	14.73	5.74	14.12	6.91	13.61	6.54
	-8.5	-9.1	17.03	4.81	16.44	4.95	15.95	5.48	15.21	6.29	14.62	7.46	14.13	7.09
	-7	-7.6	17.65	5.35	17.08	5.48	16.61	6.04	15.89	6.83	15.32	8.01	14.85	7.65
	-5	-5.6	18.59	5.62	18.04	5.75	17.59	6.31	16.89	7.11	16.34	8.29	15.89	7.92
	-3	-3.7	19.42	5.08	18.90	5.22	18.48	5.76	17.81	6.56	17.29	7.74	16.87	7.37
	0	-0.7	20.77	4.64	20.29	4.77	19.91	5.29	19.28	6.11	18.80	7.28	18.42	6.91
	3	2.2	22.23	4.10	21.77	4.24	21.41	4.73	20.80	5.56	20.34	6.73	19.98	6.36
	5	4.1	22.96	4.19	22.53	4.33	22.20	4.83	21.62	5.65	21.19	6.82	20.86	6.45
	7	6	24.58	4.41	24.17	4.54	23.86	5.05	23.30	5.87	22.89	7.04	22.58	6.67
	9	7.9	24.62	4.55	24.25	4.68	23.98	5.20	23.46	6.02	23.09	7.19	22.82	6.82
	11	9.8	25.56	4.64	25.25	4.77	25.04	5.29	24.58	6.11	24.27	7.28	24.06	6.91
	13	11.8	26.39	4.67	26.11	4.81	25.93	5.33	25.50	6.14	25.22	7.31	25.04	6.95
	15	13.7	27.22	4.61	26.97	4.74	26.82	5.26	26.42	6.08	26.17	7.25	26.02	6.88
	19	14.2	27.43	4.56	27.21	4.69	27.09	5.21	26.72	6.02	26.50	7.19	26.38	6.83
	21	15	27.85	4.48	27.67	4.61	27.59	5.12	27.26	5.94	27.08	7.11	27.00	6.74
60%	-14.7	-15	13.75	3.02	13.07	3.15	12.49	3.43	11.66	4.31	10.98	5.34	10.40	5.00
	-12.6	-13	14.68	3.28	14.02	3.41	13.46	3.69	12.65	4.57	11.99	5.60	11.43	5.25
	-10.5	-11	15.51	3.53	14.88	3.66	14.35	3.95	13.57	4.82	12.94	5.86	12.41	5.51
	-9.5	-10	16.03	4.14	15.42	4.27	14.91	4.55	14.15	5.43	13.54	6.46	13.03	6.11
	-8.5	-9.1	16.45	4.65	15.86	4.78	15.37	5.07	14.63	5.94	14.04	6.97	13.55	6.63
	-7	-7.6	17.07	5.17	16.50	5.30	16.03	5.58	15.31	6.46	14.74	7.49	14.27	7.15
	-5	-5.6	18.01	5.43	17.46	5.56	17.01	5.84	16.31	6.72	15.76	7.75	15.31	7.40
	-3	-3.7	18.84	4.91	18.32	5.04	17.90	5.32	17.23	6.20	16.71	7.23	16.29	6.89
	0	-0.7	20.19	4.48	19.71	4.61	19.33	4.89	18.70	5.77	18.22	6.80	17.84	6.46
	3	2.2	21.65	3.96	21.19	4.09	20.83	4.38	20.22	5.25	19.76	6.29	19.40	5.94
	5	4.1	22.38	4.05	21.95	4.18	21.62	4.46	21.04	5.34	20.61	6.37	20.28	6.03
	7	6	24.00	4.26	23.59	4.39	23.28	4.67	22.72	5.55	22.31	6.58	22.00	6.24
	9	7.9	24.04	4.39	23.67	4.52	23.40	4.81	22.88	5.68	22.51	6.72	22.24	6.37
	11	9.8	24.98	4.48	24.67	4.61	24.46	4.89	24.00	5.77	23.69	6.80	23.48	6.46
	13	11.8	25.81	4.52	25.53	4.64	25.35	4.93	24.92	5.81	24.64	6.84	24.46	6.49
	15	13.7	26.64	4.45	26.39	4.58	26.24	4.87	25.84	5.74	25.59	6.78	25.44	6.43
	19	14.2	26.85	4.40	26.63	4.53	26.51	4.82	26.14	5.69	25.92	6.73	25.80	6.38
	21	15	27.27	4.33	27.09	4.45	27.01	4.74	26.68	5.62	26.50	6.65	26.42	6.30

AV08NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
50%	-14.7	-15	13.08	2.91	12.40	3.04	11.82	3.31	10.99	4.16	10.31	5.15	9.73	4.82
	-12.6	-13	14.01	3.16	13.35	3.29	12.79	3.56	11.98	4.41	11.32	5.40	10.76	5.07
	-10.5	-11	14.84	3.41	14.21	3.54	13.68	3.81	12.90	4.66	12.27	5.65	11.74	5.32
	-9.5	-10	15.36	3.99	14.75	4.12	14.24	4.39	13.48	5.24	12.87	6.23	12.36	5.90
	-8.5	-9.1	15.78	4.49	15.19	4.61	14.70	4.89	13.96	5.74	13.37	6.73	12.88	6.40
	-7	-7.6	16.40	4.99	15.83	5.11	15.36	5.39	14.64	6.23	14.07	7.23	13.60	6.90
	-5	-5.6	17.34	5.24	16.79	5.36	16.34	5.64	15.64	6.48	15.09	7.48	14.64	7.15
	-3	-3.7	18.17	4.74	17.65	4.86	17.23	5.14	16.56	5.98	16.04	6.98	15.62	6.65
	0	-0.7	19.52	4.32	19.04	4.45	18.66	4.72	18.03	5.57	17.55	6.57	17.17	6.23
	3	2.2	20.98	3.83	20.52	3.95	20.16	4.22	19.55	5.07	19.09	6.07	18.73	5.74
	5	4.1	21.71	3.91	21.28	4.03	20.95	4.31	20.37	5.15	19.94	6.15	19.61	5.82
	7	6	23.33	4.11	22.92	4.23	22.61	4.51	22.05	5.35	21.64	6.35	21.33	6.02
	9	7.9	23.37	4.24	23.00	4.37	22.73	4.64	22.21	5.49	21.84	6.48	21.57	6.15
	11	9.8	24.31	4.32	24.00	4.45	23.79	4.72	23.33	5.57	23.02	6.57	22.81	6.23
	13	11.8	25.14	4.36	24.86	4.48	24.68	4.76	24.25	5.60	23.97	6.60	23.79	6.27
	15	13.7	25.97	4.30	25.72	4.42	25.57	4.70	25.17	5.54	24.92	6.54	24.77	6.21
	19	14.2	26.18	4.25	25.96	4.37	25.84	4.65	25.47	5.49	25.25	6.49	25.13	6.16
	21	15	26.60	4.17	26.42	4.30	26.34	4.57	26.01	5.42	25.83	6.42	25.75	6.08

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DC INVERTER MRV III-S

AV10NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
130%	-14.7	-15	20.84	5.66	19.98	5.90	19.25	6.62	18.20	8.47	17.35	9.28	16.61	8.68
	-12.6	-13	22.01	6.22	21.18	6.38	20.48	7.11	19.46	8.98	18.63	9.73	17.92	9.13
	-10.5	-11	23.06	6.79	22.27	6.87	21.60	7.61	20.62	9.48	19.82	10.17	19.16	9.58
	-9.5	-10	23.72	8.10	22.95	8.00	22.31	8.77	21.35	10.67	20.58	11.22	19.94	10.62
	-8.5	-9.1	24.24	9.23	23.50	8.96	22.88	9.77	21.95	11.68	21.21	12.12	20.59	11.52
	-7	-7.6	25.03	10.36	24.31	9.93	23.72	10.76	22.81	12.69	22.09	13.01	21.50	12.41
	-5	-5.6	26.21	10.92	25.52	10.41	24.95	11.26	24.07	13.20	23.37	13.50	22.81	12.86
	-3	-3.7	27.26	9.79	26.60	9.45	26.07	10.27	25.23	12.19	24.57	12.56	24.04	11.97
	0	-0.7	28.96	8.85	28.36	8.64	27.88	9.44	27.08	11.34	26.48	11.82	26.00	11.22
	3	2.2	30.79	7.73	30.21	7.67	29.76	8.44	28.99	10.33	28.41	10.92	27.96	10.32
	5	4.1	31.71	7.91	31.17	7.83	30.75	8.61	30.02	10.50	29.48	11.07	29.07	10.47
	7	6	33.76	8.37	33.24	8.22	32.85	9.01	32.14	10.90	31.63	11.43	31.24	10.83
	9	7.9	33.81	8.67	33.34	8.48	33.00	9.27	32.35	11.17	31.88	11.67	31.54	11.07
	11	9.8	34.99	8.85	34.60	8.64	34.33	9.44	33.75	11.34	33.36	11.82	33.10	11.22
	13	11.8	36.04	8.93	35.68	8.70	35.46	9.50	34.91	11.41	34.56	11.88	34.34	11.28
	15	13.7	37.08	8.80	36.77	8.59	36.58	9.39	36.08	11.29	35.76	11.77	35.57	11.17
	19	14.2	37.35	8.68	37.07	8.50	36.92	9.29	36.45	11.19	36.17	11.68	36.02	11.09
	21	15	37.87	9.46	37.64	8.35	37.54	9.14	37.13	11.04	36.90	11.55	36.80	10.95
120%	-14.7	-15	20.56	5.49	19.70	5.67	18.97	6.30	17.92	7.99	17.07	9.01	16.34	8.43
	-12.6	-13	21.74	6.04	20.91	6.14	20.20	6.78	19.18	8.47	18.35	9.44	17.64	8.86
	-10.5	-11	22.79	6.59	21.99	6.60	21.32	7.25	20.34	8.95	19.55	9.88	18.88	9.30
	-9.5	-10	23.44	7.87	22.67	7.69	22.03	8.36	21.07	10.06	20.30	10.89	19.66	10.31
	-8.5	-9.1	23.97	8.96	23.22	8.62	22.60	9.30	21.67	11.02	20.93	11.76	20.31	11.18
	-7	-7.6	24.75	10.06	24.03	9.55	23.44	10.25	22.53	11.98	21.82	12.63	21.22	12.05
	-5	-5.6	25.93	10.60	25.24	10.01	24.67	10.72	23.79	12.45	23.10	13.07	22.53	12.49
	-3	-3.7	26.98	9.51	26.32	9.08	25.79	9.78	24.95	11.50	24.30	12.20	23.77	11.62
	0	-0.7	28.68	8.60	28.08	8.31	27.60	8.99	26.81	10.70	26.20	11.47	25.72	10.89
	3	2.2	30.52	7.50	29.94	7.38	29.48	8.04	28.72	9.74	28.14	10.60	27.68	10.02
	5	4.1	31.43	7.68	30.89	7.53	30.48	8.20	29.75	9.90	29.20	10.75	28.79	10.17
	7	6	33.48	8.12	32.96	7.91	32.57	8.58	31.87	10.29	31.35	11.10	30.96	10.52
	9	7.9	33.53	8.41	33.06	8.15	32.72	8.83	32.07	10.54	31.60	11.33	31.26	10.75
	11	9.8	34.71	8.60	34.32	8.31	34.06	8.99	33.48	10.70	33.09	11.47	32.82	10.89
	13	11.8	35.76	8.67	35.41	8.37	35.18	9.05	34.64	10.76	34.28	11.53	34.06	10.95
	15	13.7	36.81	8.54	36.49	8.26	36.30	8.94	35.80	10.65	35.48	11.43	35.30	10.85
	19	14.2	37.07	8.43	36.79	8.17	36.64	8.84	36.17	10.56	35.90	11.34	35.75	10.76
	21	15	37.59	9.19	37.37	8.03	37.27	8.70	36.85	10.41	36.62	11.21	36.52	10.63

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DC INVERTER MRV III-S

AV10NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
110%	-14.7	-15	19.89	5.39	19.03	5.51	18.30	6.06	17.26	7.61	16.40	8.75	15.67	8.26
	-12.6	-13	21.07	5.92	20.24	5.96	19.53	6.52	18.51	8.06	17.68	9.17	16.97	8.69
	-10.5	-11	22.12	6.46	21.32	6.41	20.66	6.97	19.67	8.52	18.88	9.59	18.21	9.12
	-9.5	-10	22.77	7.71	22.00	7.46	21.36	8.03	20.40	9.58	19.64	10.58	18.99	10.11
	-8.5	-9.1	23.30	8.79	22.55	8.37	21.94	8.94	21.00	10.49	20.26	11.42	19.64	10.96
	-7	-7.6	24.08	9.86	23.37	9.27	22.77	9.86	21.87	11.41	21.15	12.27	20.56	11.82
	-5	-5.6	25.26	10.40	24.57	9.72	24.00	10.31	23.12	11.86	22.43	12.69	21.86	12.24
	-3	-3.7	26.31	9.32	25.66	8.82	25.13	9.40	24.28	10.95	23.63	11.84	23.10	11.39
	0	-0.7	28.01	8.43	27.41	8.07	26.93	8.64	26.14	10.19	25.53	11.14	25.05	10.68
	3	2.2	29.85	7.35	29.27	7.16	28.82	7.73	28.05	9.28	27.47	10.29	27.01	9.83
	5	4.1	30.77	7.53	30.22	7.31	29.81	7.88	29.08	9.43	28.54	10.43	28.12	9.97
	7	6	32.81	7.96	32.29	7.67	31.90	8.25	31.20	9.80	30.68	10.77	30.29	10.31
	9	7.9	32.86	8.25	32.40	7.92	32.06	8.49	31.40	10.04	30.94	11.00	30.60	10.54
	11	9.8	34.04	8.43	33.65	8.07	33.39	8.64	32.81	10.19	32.42	11.14	32.15	10.68
	13	11.8	35.09	8.50	34.74	8.13	34.51	8.70	33.97	10.25	33.62	11.20	33.39	10.74
	15	13.7	36.14	8.37	35.82	8.02	35.64	8.60	35.13	10.14	34.82	11.10	34.63	10.64
	19	14.2	36.40	8.27	36.12	7.93	35.97	8.50	35.51	10.05	35.23	11.01	35.08	10.55
	21	15	36.93	9.01	36.70	7.80	36.60	8.37	36.18	9.92	35.96	10.89	35.85	10.42
100%	-14.7	-15	19.49	4.85	18.63	5.05	17.90	5.51	16.85	6.92	16.00	8.57	15.27	8.02
	-12.6	-13	20.67	5.26	19.83	5.47	19.13	5.92	18.11	7.33	17.28	8.99	16.57	8.44
	-10.5	-11	21.71	5.67	20.92	5.88	20.25	6.34	19.27	7.75	18.48	9.40	17.81	8.85
	-9.5	-10	22.37	6.64	21.60	6.85	20.96	7.30	20.00	8.71	19.23	10.37	18.59	9.82
	-8.5	-9.1	22.89	7.47	22.15	7.68	21.53	8.13	20.60	9.54	19.86	11.20	19.24	10.64
	-7	-7.6	23.68	8.30	22.96	8.50	22.37	8.96	21.46	10.37	20.74	12.03	20.15	11.47
	-5	-5.6	24.86	8.71	24.17	8.92	23.60	9.37	22.72	10.78	22.02	12.44	21.46	11.89
	-3	-3.7	25.91	7.88	25.25	8.09	24.72	8.55	23.88	9.95	23.22	11.61	22.70	11.06
	0	-0.7	27.61	7.19	27.01	7.40	26.53	7.86	25.73	9.26	25.13	10.92	24.65	10.37
	3	2.2	29.45	6.36	28.87	6.57	28.41	7.03	27.64	8.44	27.06	10.09	26.61	9.54
	5	4.1	30.36	6.50	29.82	6.71	29.41	7.17	28.68	8.57	28.13	10.23	27.72	9.68
	7	6	32.41	6.83	31.89	7.04	31.50	7.50	30.79	8.90	30.28	10.56	29.89	10.01
	9	7.9	32.46	7.05	31.99	7.26	31.65	7.72	31.00	9.13	30.53	10.78	30.19	10.23
	11	9.8	33.64	7.19	33.25	7.40	32.98	7.86	32.40	9.26	32.01	10.92	31.75	10.37
	13	11.8	34.69	7.25	34.34	7.46	34.11	7.91	33.57	9.32	33.21	10.98	32.99	10.42
	15	13.7	35.74	7.15	35.42	7.36	35.23	7.81	34.73	9.22	34.41	10.88	34.22	10.33
	19	14.2	36.00	7.07	35.72	7.28	35.57	7.73	35.10	9.14	34.83	10.80	34.68	10.24
	21	15	36.52	6.94	36.30	7.15	36.19	7.61	35.78	9.02	35.55	10.67	35.45	10.12

Haier

DC INVERTER MRV III-S

AV10NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
90%	-14.7	-15	19.12	4.65	18.26	4.85	17.53	5.29	16.49	6.64	15.63	8.23	14.90	7.70
	-12.6	-13	20.30	5.05	19.47	5.25	18.76	5.69	17.74	7.04	16.91	8.63	16.21	8.10
	-10.5	-11	21.35	5.45	20.56	5.65	19.89	6.08	18.91	7.44	18.11	9.03	17.44	8.50
	-9.5	-10	22.00	6.38	21.24	6.57	20.59	7.01	19.64	8.36	18.87	9.95	18.22	9.42
	-8.5	-9.1	22.53	7.17	21.79	7.37	21.17	7.81	20.24	9.16	19.49	10.75	18.87	10.22
	-7	-7.6	23.32	7.97	22.60	8.16	22.00	8.60	21.10	9.95	20.38	11.54	19.79	11.01
	-5	-5.6	24.49	8.36	23.80	8.56	23.23	9.00	22.35	10.35	21.66	11.94	21.09	11.41
	-3	-3.7	25.54	7.57	24.89	7.77	24.36	8.20	23.51	9.56	22.86	11.15	22.33	10.62
	0	-0.7	27.25	6.91	26.64	7.10	26.16	7.54	25.37	8.89	24.76	10.48	24.29	9.95
	3	2.2	29.08	6.11	28.50	6.31	28.05	6.75	27.28	8.10	26.70	9.69	26.25	9.16
	5	4.1	30.00	6.24	29.46	6.44	29.04	6.88	28.31	8.23	27.77	9.82	27.35	9.29
	7	6	32.04	6.56	31.53	6.76	31.13	7.20	30.43	8.55	29.91	10.14	29.52	9.61
	9	7.9	32.09	6.77	31.63	6.97	31.29	7.41	30.63	8.76	30.17	10.35	29.83	9.82
	11	9.8	33.27	6.91	32.88	7.10	32.62	7.54	32.04	8.89	31.65	10.48	31.38	9.95
	13	11.8	34.32	6.96	33.97	7.16	33.74	7.59	33.20	8.95	32.85	10.54	32.62	10.01
	15	13.7	35.37	6.87	35.06	7.06	34.87	7.50	34.36	8.85	34.05	10.44	33.86	9.91
	19	14.2	35.63	6.79	35.36	6.98	35.20	7.42	34.74	8.77	34.46	10.36	34.31	9.83
	21	15	36.16	6.67	35.93	6.87	35.83	7.30	35.41	8.65	35.19	10.25	35.09	9.72
80%	-14.7	-15	18.67	4.46	17.81	4.65	17.08	5.12	16.03	6.36	15.18	7.80	14.45	7.38
	-12.6	-13	19.85	4.84	19.02	5.03	18.31	5.51	17.29	6.74	16.46	8.18	15.75	7.76
	-10.5	-11	20.90	5.22	20.10	5.41	19.43	5.89	18.45	7.13	17.66	8.56	16.99	8.14
	-9.5	-10	21.55	6.11	20.78	6.30	20.14	6.79	19.18	8.01	18.41	9.44	17.77	9.03
	-8.5	-9.1	22.08	6.87	21.33	7.06	20.71	7.56	19.78	8.78	19.04	10.19	18.42	9.79
	-7	-7.6	22.86	7.63	22.14	7.82	21.55	8.33	20.64	9.54	19.93	10.94	19.33	10.56
	-5	-5.6	24.04	8.01	23.35	8.21	22.78	8.72	21.90	9.92	21.21	11.32	20.64	10.94
	-3	-3.7	25.09	7.25	24.43	7.44	23.90	7.95	23.06	9.16	22.41	10.57	21.88	10.17
	0	-0.7	26.79	6.62	26.19	6.81	25.71	7.31	24.92	8.52	24.31	9.94	23.83	9.54
	3	2.2	28.63	5.86	28.05	6.05	27.59	6.54	26.83	7.76	26.25	9.18	25.79	8.78
	5	4.1	29.54	5.98	29.00	6.17	28.59	6.66	27.86	7.89	27.31	9.31	26.90	8.90
	7	6	31.59	6.29	31.07	6.48	30.68	6.97	29.98	8.19	29.46	9.61	29.07	9.21
	9	7.9	31.64	6.49	31.17	6.68	30.83	7.18	30.18	8.40	29.71	9.81	29.37	9.41
	11	9.8	32.82	6.62	32.43	6.81	32.17	7.31	31.59	8.52	31.20	9.94	30.93	9.54
	13	11.8	33.87	6.67	33.52	6.86	33.29	7.36	32.75	8.57	32.39	9.99	32.17	9.59
	15	13.7	34.92	6.58	34.60	6.77	34.41	7.27	33.91	8.48	33.59	9.90	33.41	9.50
	19	14.2	35.18	6.50	34.90	6.69	34.75	7.19	34.28	8.41	34.01	9.82	33.86	9.42
	21	15	35.70	6.39	35.48	6.58	35.38	7.07	34.96	8.29	34.73	9.71	34.63	9.31

AV10NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
70%	-14.7	-15	18.05	4.31	17.19	4.50	16.46	5.12	15.42	6.29	14.56	7.89	13.83	7.38
	-12.6	-13	19.23	4.68	18.40	4.87	17.69	5.51	16.67	6.67	15.84	8.27	15.14	7.76
	-10.5	-11	20.28	5.05	19.48	5.23	18.82	5.89	17.83	7.05	17.04	8.65	16.37	8.14
	-9.5	-10	20.93	5.91	20.17	6.09	19.52	6.79	18.56	7.93	17.80	9.54	17.15	9.03
	-8.5	-9.1	21.46	6.65	20.71	6.83	20.10	7.56	19.16	8.68	18.42	10.30	17.80	9.79
	-7	-7.6	22.24	7.38	21.53	7.57	20.93	8.33	20.03	9.44	19.31	11.06	18.72	10.56
	-5	-5.6	23.42	7.75	22.73	7.94	22.16	8.72	21.28	9.81	20.59	11.44	20.02	10.94
	-3	-3.7	24.47	7.02	23.82	7.20	23.29	7.95	22.44	9.06	21.79	10.68	21.26	10.17
	0	-0.7	26.18	6.40	25.57	6.59	25.09	7.31	24.30	8.43	23.69	10.05	23.21	9.54
	3	2.2	28.01	5.66	27.43	5.85	26.98	6.54	26.21	7.68	25.63	9.28	25.17	8.78
	5	4.1	28.93	5.79	28.39	5.97	27.97	6.66	27.24	7.80	26.70	9.41	26.28	8.90
	7	6	30.97	6.08	30.45	6.27	30.06	6.97	29.36	8.10	28.84	9.72	28.45	9.21
	9	7.9	31.02	6.28	30.56	6.46	30.22	7.18	29.56	8.30	29.10	9.92	28.76	9.41
	11	9.8	32.20	6.40	31.81	6.59	31.55	7.31	30.97	8.43	30.58	10.05	30.31	9.54
	13	11.8	33.25	6.45	32.90	6.64	32.67	7.36	32.13	8.48	31.78	10.10	31.55	9.59
	15	13.7	34.30	6.36	33.98	6.55	33.80	7.27	33.29	8.39	32.98	10.01	32.79	9.50
	19	14.2	34.56	6.29	34.28	6.48	34.13	7.19	33.67	8.32	33.39	9.93	33.24	9.42
	21	15	35.09	6.18	34.86	6.36	34.76	7.07	34.34	8.20	34.12	9.82	34.01	9.31
60%	-14.7	-15	17.32	4.17	16.46	4.35	15.73	4.74	14.69	5.95	13.83	7.37	13.10	6.90
	-12.6	-13	18.50	4.52	17.67	4.70	16.96	5.09	15.94	6.30	15.11	7.73	14.40	7.25
	-10.5	-11	19.55	4.88	18.75	5.06	18.09	5.45	17.10	6.66	16.31	8.09	15.64	7.61
	-9.5	-10	20.20	5.71	19.43	5.89	18.79	6.28	17.83	7.49	17.07	8.92	16.42	8.44
	-8.5	-9.1	20.73	6.42	19.98	6.60	19.37	6.99	18.43	8.20	17.69	9.63	17.07	9.15
	-7	-7.6	21.51	7.14	20.80	7.31	20.20	7.71	19.30	8.92	18.58	10.34	17.99	9.87
	-5	-5.6	22.69	7.49	22.00	7.67	21.43	8.06	20.55	9.27	19.86	10.70	19.29	10.22
	-3	-3.7	23.74	6.78	23.09	6.96	22.56	7.35	21.71	8.56	21.06	9.99	20.53	9.51
	0	-0.7	25.44	6.19	24.84	6.36	24.36	6.76	23.57	7.97	22.96	9.39	22.48	8.92
	3	2.2	27.28	5.47	26.70	5.65	26.25	6.04	25.48	7.25	24.90	8.68	24.44	8.20
	5	4.1	28.20	5.59	27.65	5.77	27.24	6.16	26.51	7.37	25.97	8.80	25.55	8.32
	7	6	30.24	5.88	29.72	6.06	29.33	6.45	28.63	7.66	28.11	9.08	27.72	8.61
	9	7.9	30.29	6.07	29.83	6.25	29.49	6.64	28.83	7.85	28.37	9.27	28.02	8.80
	11	9.8	31.47	6.19	31.08	6.36	30.82	6.76	30.24	7.97	29.85	9.39	29.58	8.92
	13	11.8	32.52	6.23	32.17	6.41	31.94	6.80	31.40	8.01	31.05	9.44	30.82	8.96
	15	13.7	33.57	6.15	33.25	6.33	33.06	6.72	32.56	7.93	32.25	9.36	32.06	8.88
	19	14.2	33.83	6.08	33.55	6.26	33.40	6.65	32.94	7.86	32.66	9.28	32.51	8.81
	21	15	34.36	5.97	34.13	6.15	34.03	6.54	33.61	7.75	33.38	9.18	33.28	8.70

AV10NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
50%	-14.7	-15	16.48	4.02	15.62	4.19	14.89	4.57	13.84	5.74	12.99	7.12	12.25	6.66
	-12.6	-13	17.66	4.37	16.82	4.54	16.12	4.92	15.10	6.08	14.27	7.46	13.56	7.00
	-10.5	-11	18.70	4.71	17.91	4.88	17.24	5.26	16.26	6.43	15.47	7.80	14.80	7.35
	-9.5	-10	19.36	5.51	18.59	5.68	17.95	6.06	16.99	7.23	16.22	8.61	15.58	8.15
	-8.5	-9.1	19.88	6.20	19.14	6.37	18.52	6.75	17.59	7.92	16.85	9.29	16.23	8.83
	-7	-7.6	20.67	6.89	19.95	7.06	19.36	7.44	18.45	8.61	17.73	9.98	17.14	9.52
	-5	-5.6	21.85	7.23	21.16	7.40	20.59	7.78	19.71	8.95	19.01	10.32	18.45	9.87
	-3	-3.7	22.90	6.54	22.24	6.72	21.71	7.09	20.87	8.26	20.21	9.64	19.68	9.18
	0	-0.7	24.60	5.97	24.00	6.14	23.52	6.52	22.72	7.69	22.12	9.06	21.64	8.61
	3	2.2	26.43	5.28	25.86	5.45	25.40	5.83	24.63	7.00	24.05	8.38	23.60	7.92
	5	4.1	27.35	5.40	26.81	5.57	26.39	5.95	25.66	7.12	25.12	8.49	24.71	8.03
	7	6	29.40	5.67	28.88	5.84	28.49	6.22	27.78	7.39	27.27	8.77	26.88	8.31
	9	7.9	29.45	5.86	28.98	6.03	28.64	6.41	27.99	7.57	27.52	8.95	27.18	8.49
	11	9.8	30.63	5.97	30.24	6.14	29.97	6.52	29.39	7.69	29.00	9.06	28.74	8.61
	13	11.8	31.68	6.02	31.32	6.19	31.10	6.57	30.56	7.73	30.20	9.11	29.98	8.65
	15	13.7	32.72	5.94	32.41	6.11	32.22	6.49	31.72	7.65	31.40	9.03	31.21	8.57
	19	14.2	32.99	5.87	32.71	6.04	32.56	6.42	32.09	7.59	31.82	8.96	31.66	8.50
	21	15	33.51	5.76	33.28	5.94	33.18	6.31	32.77	7.48	32.54	8.86	32.44	8.40

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DC INVERTER MRV III-S

AV12NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
130%	-14.7	-15	24.79	7.24	23.77	7.55	22.90	8.47	21.66	9.32	20.64	10.30	19.77	9.55
	-12.6	-13	26.20	7.96	25.21	8.17	24.37	9.11	23.15	9.87	22.16	10.80	21.32	10.04
	-10.5	-11	27.45	8.69	26.50	8.79	25.71	9.74	24.54	10.43	23.59	11.29	22.80	10.53
	-9.5	-10	28.22	10.37	27.31	10.23	26.55	11.23	25.41	11.73	24.49	12.45	23.73	11.68
	-8.5	-9.1	28.85	11.81	27.96	11.47	27.23	12.50	26.12	12.85	25.23	13.45	24.50	12.67
	-7	-7.6	29.78	13.26	28.93	12.71	28.22	13.78	27.15	13.96	26.29	14.44	25.59	13.66
	-5	-5.6	31.19	13.98	30.36	13.33	29.69	14.41	28.64	14.52	27.81	15.00	27.14	14.15
	-3	-3.7	32.44	12.54	31.66	12.09	31.03	13.14	30.02	13.41	29.24	13.95	28.61	13.16
	0	-0.7	34.46	11.33	33.74	11.06	33.17	12.08	32.23	12.48	31.51	13.12	30.94	12.34
	3	2.2	36.65	9.89	35.96	9.82	35.42	10.80	34.50	11.36	33.81	12.12	33.27	11.36
	5	4.1	37.74	10.13	37.09	10.03	36.60	11.02	35.73	11.55	35.08	12.29	34.59	11.52
	7	6	40.17	10.71	39.55	10.52	39.09	11.53	38.25	11.99	37.63	12.69	37.17	11.91
	9	7.9	40.23	11.09	39.68	10.85	39.27	11.87	38.49	12.29	37.94	12.95	37.53	12.18
	11	9.8	41.64	11.33	41.17	11.06	40.86	12.08	40.17	12.48	39.70	13.12	39.39	12.34
	13	11.8	42.88	11.43	42.46	11.14	42.19	12.16	41.55	12.55	41.13	13.18	40.86	12.41
	15	13.7	44.13	11.26	43.76	11.00	43.53	12.01	42.93	12.42	42.56	13.07	42.33	12.29
	19	14.2	44.44	11.12	44.11	10.87	43.93	11.89	43.38	12.31	43.05	12.97	42.87	12.19
	21	15	45.07	12.11	44.80	10.69	44.68	11.70	44.18	12.14	43.91	12.82	43.79	12.05
120%	-14.7	-15	24.46	7.03	23.44	7.26	22.57	8.07	21.33	8.79	20.31	10.00	19.44	9.27
	-12.6	-13	25.87	7.73	24.88	7.86	24.04	8.67	22.82	9.31	21.83	10.48	20.99	9.75
	-10.5	-11	27.12	8.43	26.17	8.45	25.38	9.28	24.21	9.84	23.26	10.96	22.47	10.23
	-9.5	-10	27.89	10.07	26.98	9.84	26.22	10.69	25.08	11.07	24.16	12.09	23.40	11.34
	-8.5	-9.1	28.52	11.47	27.63	11.03	26.90	11.91	25.79	12.12	24.91	13.06	24.17	12.30
	-7	-7.6	29.45	12.87	28.60	12.22	27.89	13.12	26.82	13.17	25.96	14.02	25.26	13.26
	-5	-5.6	30.86	13.57	30.03	12.82	29.36	13.73	28.31	13.70	27.48	14.51	26.81	13.74
	-3	-3.7	32.11	12.17	31.33	11.63	30.70	12.51	29.69	12.65	28.91	13.54	28.28	12.78
	0	-0.7	34.13	11.00	33.41	10.63	32.84	11.50	31.90	11.77	31.18	12.74	30.61	11.98
	3	2.2	36.32	9.60	35.63	9.44	35.09	10.29	34.17	10.72	33.48	11.77	32.94	11.03
	5	4.1	37.41	9.83	36.76	9.64	36.27	10.49	35.40	10.89	34.75	11.93	34.26	11.18
	7	6	39.84	10.40	39.22	10.12	38.76	10.98	37.92	11.31	37.31	12.32	36.84	11.57
	9	7.9	39.90	10.77	39.35	10.44	38.94	11.30	38.16	11.59	37.61	12.57	37.20	11.82
	11	9.8	41.31	11.00	40.84	10.63	40.53	11.50	39.84	11.77	39.37	12.74	39.06	11.98
	13	11.8	42.55	11.10	42.13	10.71	41.86	11.58	41.22	11.84	40.80	12.80	40.53	12.05
	15	13.7	43.80	10.93	43.43	10.57	43.20	11.44	42.60	11.72	42.23	12.69	42.00	11.93
	19	14.2	44.11	10.79	43.78	10.46	43.60	11.32	43.05	11.61	42.72	12.59	42.54	11.84
	21	15	44.74	11.76	44.47	10.28	44.35	11.14	43.85	11.45	43.58	12.45	43.46	11.70

AV12NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
110%	-14.7	-15	23.67	6.89	22.65	7.05	21.78	7.76	20.54	8.37	19.52	9.71	18.65	9.09
	-12.6	-13	25.07	7.58	24.08	7.63	23.24	8.34	22.03	8.87	21.04	10.18	20.20	9.56
	-10.5	-11	26.32	8.27	25.38	8.21	24.58	8.92	23.41	9.37	22.47	10.64	21.67	10.03
	-9.5	-10	27.10	9.87	26.19	9.55	25.42	10.28	24.28	10.54	23.37	11.74	22.60	11.12
	-8.5	-9.1	27.72	11.25	26.84	10.71	26.10	11.45	24.99	11.54	24.11	12.68	23.38	12.06
	-7	-7.6	28.66	12.62	27.80	11.87	27.10	12.62	26.02	12.55	25.17	13.61	24.46	13.00
	-5	-5.6	30.06	13.31	29.24	12.44	28.56	13.20	27.51	13.05	26.69	14.08	26.01	13.47
	-3	-3.7	31.31	11.93	30.53	11.29	29.90	12.03	28.90	12.04	28.12	13.15	27.49	12.53
	0	-0.7	33.34	10.79	32.62	10.32	32.05	11.06	31.10	11.21	30.38	12.36	29.81	11.75
	3	2.2	35.52	9.41	34.83	9.17	34.29	9.89	33.38	10.21	32.69	11.43	32.15	10.81
	5	4.1	36.61	9.64	35.97	9.36	35.47	10.09	34.60	10.37	33.96	11.58	33.46	10.97
	7	6	39.04	10.19	38.43	9.82	37.96	10.56	37.13	10.77	36.51	11.96	36.05	11.34
	9	7.9	39.11	10.56	38.55	10.13	38.15	10.87	37.37	11.04	36.81	12.21	36.41	11.59
	11	9.8	40.51	10.79	40.05	10.32	39.73	11.06	39.04	11.21	38.58	12.36	38.26	11.75
	13	11.8	41.76	10.88	41.34	10.40	41.07	11.14	40.42	11.28	40.00	12.43	39.73	11.81
	15	13.7	43.01	10.72	42.63	10.27	42.41	11.00	41.81	11.16	41.43	12.32	41.21	11.70
	19	14.2	43.32	10.58	42.99	10.15	42.81	10.89	42.25	11.06	41.92	12.22	41.74	11.61
	21	15	43.94	11.53	43.67	9.98	43.55	10.71	43.06	10.91	42.79	12.08	42.67	11.47
100%	-14.7	-15	23.19	6.20	22.17	6.47	21.30	7.05	20.06	7.61	19.04	9.52	18.17	8.82
	-12.6	-13	24.59	6.73	23.60	7.00	22.76	7.58	21.55	8.06	20.56	9.98	19.72	9.28
	-10.5	-11	25.84	7.26	24.90	7.53	24.10	8.11	22.93	8.52	21.99	10.44	21.19	9.73
	-9.5	-10	26.62	8.50	25.71	8.77	24.94	9.35	23.80	9.58	22.89	11.51	22.12	10.80
	-8.5	-9.1	27.24	9.56	26.36	9.83	25.62	10.41	24.52	10.49	23.63	12.43	22.90	11.71
	-7	-7.6	28.18	10.62	27.33	10.89	26.62	11.47	25.54	11.41	24.69	13.35	23.98	12.62
	-5	-5.6	29.58	11.15	28.76	11.42	28.08	12.00	27.03	11.86	26.21	13.81	25.53	13.08
	-3	-3.7	30.83	10.09	30.05	10.36	29.42	10.94	28.42	10.95	27.64	12.89	27.01	12.16
	0	-0.7	32.86	9.21	32.14	9.47	31.57	10.06	30.62	10.19	29.90	12.12	29.33	11.41
	3	2.2	35.04	8.15	34.35	8.41	33.81	8.99	32.90	9.28	32.21	11.20	31.67	10.49
	5	4.1	36.13	8.32	35.49	8.59	34.99	9.17	34.12	9.43	33.48	11.36	32.98	10.65
	7	6	38.56	8.75	37.95	9.01	37.50	9.62	36.65	9.80	36.03	11.72	35.57	11.01
	9	7.9	38.63	9.03	38.07	9.30	37.67	9.88	36.89	10.04	36.33	11.97	35.93	11.25
	11	9.8	40.03	9.21	39.57	9.47	39.25	10.06	38.56	10.19	38.10	12.12	37.78	11.41
	13	11.8	41.28	9.28	40.86	9.54	40.59	10.13	39.94	10.25	39.52	12.18	39.25	11.47
	15	13.7	42.53	9.15	42.15	9.42	41.93	10.00	41.33	10.14	40.95	12.08	40.73	11.36
	19	14.2	42.84	9.05	42.51	9.31	42.33	9.90	41.77	10.05	41.44	11.98	41.26	11.27
	21	15	43.46	8.89	43.19	9.15	43.07	9.74	42.58	9.92	42.31	11.85	42.19	11.13

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DC INVERTER MRV III-S

AV12NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
90%	-14.7	-15	22.75	5.95	21.74	6.21	20.87	6.77	19.62	7.30	18.60	9.14	17.73	8.47
	-12.6	-13	24.16	6.46	23.17	6.72	22.33	7.28	21.11	7.74	20.12	9.58	19.29	8.91
	-10.5	-11	25.41	6.97	24.46	7.23	23.67	7.79	22.50	8.18	21.55	10.02	20.76	9.35
	-9.5	-10	26.19	8.16	25.27	8.41	24.51	8.97	23.37	9.20	22.45	11.05	21.69	10.37
	-8.5	-9.1	26.81	9.18	25.92	9.43	25.19	9.99	24.08	10.07	23.20	11.93	22.46	11.24
	-7	-7.6	27.74	10.20	26.89	10.45	26.19	11.01	25.11	10.95	24.25	12.81	23.55	12.12
	-5	-5.6	29.15	10.70	28.32	10.96	27.65	11.52	26.60	11.39	25.77	13.26	25.10	12.55
	-3	-3.7	30.40	9.69	29.62	9.94	28.99	10.50	27.98	10.51	27.20	12.37	26.57	11.68
	0	-0.7	32.42	8.84	31.70	9.09	31.13	9.65	30.19	9.78	29.47	11.64	28.90	10.95
	3	2.2	34.61	7.82	33.92	8.08	33.38	8.64	32.46	8.91	31.77	10.75	31.23	10.07
	5	4.1	35.70	7.99	35.05	8.24	34.56	8.80	33.69	9.05	33.04	10.90	32.55	10.22
	7	6	38.13	8.40	37.51	8.65	37.05	9.21	36.21	9.40	35.60	11.25	35.13	10.57
	9	7.9	38.19	8.67	37.64	8.92	37.23	9.48	36.45	9.64	35.90	11.49	35.49	10.80
	11	9.8	39.60	8.84	39.13	9.09	38.82	9.65	38.13	9.78	37.66	11.64	37.35	10.95
	13	11.8	40.84	8.91	40.42	9.16	40.15	9.72	39.51	9.84	39.09	11.70	38.82	11.01
	15	13.7	42.09	8.79	41.72	9.04	41.49	9.60	40.89	9.74	40.52	11.59	40.29	10.91
	19	14.2	42.40	8.69	42.07	8.94	41.89	9.50	41.34	9.65	41.01	11.50	40.83	10.82
	21	15	43.03	8.53	42.76	8.79	42.64	9.35	42.14	9.52	41.87	11.37	41.75	10.69
80%	-14.7	-15	22.22	5.71	21.20	5.95	20.33	6.56	19.08	7.00	18.06	8.66	17.19	8.12
	-12.6	-13	23.62	6.19	22.63	6.44	21.79	7.05	20.57	7.42	19.59	9.08	18.75	8.54
	-10.5	-11	24.87	6.68	23.92	6.93	23.13	7.54	21.96	7.84	21.01	9.50	20.22	8.96
	-9.5	-10	25.65	7.82	24.73	8.06	23.97	8.69	22.83	8.82	21.91	10.47	21.15	9.93
	-8.5	-9.1	26.27	8.80	25.38	9.04	24.65	9.68	23.54	9.65	22.66	11.31	21.92	10.77
	-7	-7.6	27.21	9.77	26.35	10.01	25.65	10.67	24.57	10.49	23.71	12.15	23.01	11.61
	-5	-5.6	28.61	10.26	27.78	10.50	27.11	11.16	26.06	10.91	25.23	12.56	24.56	12.03
	-3	-3.7	29.86	9.28	29.08	9.53	28.45	10.17	27.44	10.07	26.66	11.73	26.03	11.19
	0	-0.7	31.88	8.47	31.16	8.71	30.59	9.35	29.65	9.38	28.93	11.03	28.36	10.49
	3	2.2	34.07	7.49	33.38	7.74	32.84	8.37	31.92	8.54	31.23	10.19	30.69	9.65
	5	4.1	35.16	7.66	34.51	7.90	34.02	8.53	33.15	8.68	32.50	10.33	32.01	9.79
	7	6	37.59	8.05	36.98	8.29	36.51	8.92	35.67	9.01	35.06	10.67	34.59	10.13
	9	7.9	37.65	8.31	37.10	8.55	36.69	9.19	35.91	9.24	35.36	10.89	34.95	10.35
	11	9.8	39.06	8.47	38.59	8.71	38.28	9.35	37.59	9.38	37.12	11.03	36.81	10.49
	13	11.8	40.30	8.54	39.88	8.78	39.61	9.42	38.97	9.43	38.55	11.09	38.28	10.55
	15	13.7	41.55	8.42	41.18	8.67	40.95	9.30	40.35	9.33	39.98	10.99	39.75	10.45
	19	14.2	41.86	8.32	41.53	8.57	41.35	9.20	40.80	9.25	40.47	10.91	40.29	10.37
	21	15	42.49	8.18	42.22	8.42	42.10	9.06	41.60	9.12	41.33	10.78	41.21	10.24

Haier

DC INVERTER MRV III-S

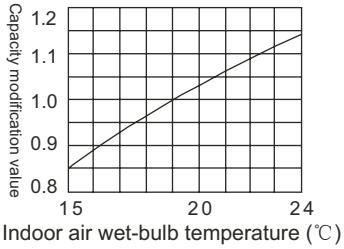
AV12NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
70%	-14.7	-15	21.48	5.52	20.46	5.76	19.59	6.56	18.35	6.92	17.33	8.76	16.46	8.12
	-12.6	-13	22.88	5.99	21.89	6.23	21.05	7.05	19.84	7.34	18.85	9.18	18.01	8.54
	-10.5	-11	24.13	6.46	23.19	6.70	22.39	7.54	21.22	7.75	20.28	9.60	19.48	8.96
	-9.5	-10	24.91	7.57	24.00	7.80	23.23	8.69	22.09	8.72	21.18	10.59	20.41	9.93
	-8.5	-9.1	25.53	8.51	24.65	8.74	23.92	9.68	22.81	9.55	21.92	11.43	21.19	10.77
	-7	-7.6	26.47	9.45	25.62	9.69	24.91	10.67	23.83	10.38	22.98	12.28	22.27	11.61
	-5	-5.6	27.87	9.92	27.05	10.16	26.37	11.16	25.32	10.79	24.50	12.70	23.83	12.03
	-3	-3.7	29.12	8.98	28.34	9.22	27.71	10.17	26.71	9.96	25.93	11.86	25.30	11.19
	0	-0.7	31.15	8.19	30.43	8.43	29.86	9.35	28.91	9.27	28.19	11.15	27.62	10.49
	3	2.2	33.33	7.25	32.64	7.49	32.10	8.37	31.19	8.44	30.50	10.31	29.96	9.65
	5	4.1	34.42	7.41	33.78	7.64	33.28	8.53	32.41	8.58	31.77	10.45	31.27	9.79
	7	6	36.86	7.79	36.24	8.02	35.78	8.92	34.94	8.91	34.32	10.79	33.86	10.13
	9	7.9	36.92	8.04	36.36	8.27	35.96	9.19	35.18	9.13	34.62	11.01	34.22	10.35
	11	9.8	38.32	8.19	37.86	8.43	37.54	9.35	36.85	9.27	36.39	11.15	36.07	10.49
	13	11.8	39.57	8.26	39.15	8.49	38.88	9.42	38.23	9.33	37.81	11.21	37.54	10.55
	15	13.7	40.82	8.15	40.44	8.38	40.22	9.30	39.62	9.23	39.24	11.11	39.02	10.45
	19	14.2	41.13	8.05	40.80	8.29	40.62	9.20	40.06	9.15	39.73	11.03	39.55	10.37
	21	15	41.75	7.91	41.48	8.15	41.36	9.06	40.87	9.02	40.60	10.90	40.48	10.24
60%	-14.7	-15	20.61	5.33	19.59	5.56	18.72	6.06	17.48	6.54	16.46	8.18	15.59	7.59
	-12.6	-13	22.01	5.79	21.02	6.02	20.18	6.52	18.97	6.94	17.98	8.58	17.14	7.98
	-10.5	-11	23.26	6.25	22.32	6.47	21.52	6.98	20.35	7.33	19.41	8.98	18.61	8.37
	-9.5	-10	24.04	7.31	23.13	7.54	22.36	8.04	21.22	8.24	20.31	9.90	19.54	9.29
	-8.5	-9.1	24.67	8.22	23.78	8.45	23.05	8.95	21.94	9.02	21.05	10.69	20.32	10.07
	-7	-7.6	25.60	9.13	24.75	9.36	24.04	9.86	22.96	9.81	22.11	11.48	21.40	10.85
	-5	-5.6	27.00	9.59	26.18	9.82	25.50	10.32	24.46	10.20	23.63	11.87	22.96	11.25
	-3	-3.7	28.25	8.68	27.47	8.91	26.84	9.41	25.84	9.42	25.06	11.08	24.43	10.46
	0	-0.7	30.28	7.92	29.56	8.15	28.99	8.65	28.04	8.76	27.33	10.42	26.76	9.81
	3	2.2	32.46	7.01	31.77	7.23	31.23	7.74	30.32	7.98	29.63	9.63	29.09	9.02
	5	4.1	33.55	7.16	32.91	7.39	32.41	7.89	31.54	8.11	30.90	9.77	30.40	9.16
	7	6	35.99	7.52	35.37	7.75	34.91	8.25	34.07	8.42	33.45	10.08	32.99	9.47
	9	7.9	36.05	7.77	35.49	7.99	35.09	8.50	34.31	8.63	33.75	10.29	33.35	9.68
	11	9.8	37.45	7.92	36.99	8.15	36.67	8.65	35.98	8.76	35.52	10.42	35.20	9.81
	13	11.8	38.70	7.98	38.28	8.21	38.01	8.71	37.37	8.82	36.95	10.48	36.68	9.86
	15	13.7	39.95	7.87	39.57	8.10	39.35	8.60	38.75	8.72	38.37	10.39	38.15	9.77
	19	14.2	40.26	7.78	39.93	8.01	39.75	8.51	39.19	8.65	38.86	10.31	38.68	9.69
	21	15	40.88	7.64	40.61	7.87	40.49	8.37	40.00	8.53	39.73	10.19	39.61	9.57

AV12NMSETA														Heating mode
Capacity factor	Outdoor temp.		Indoor temp.(℃ WB)											
			16		18		20		21		22		24	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	℃ DB	℃ WB	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW	KW
50%	-14.7	-15	19.61	5.15	18.59	5.37	17.72	5.85	16.47	6.32	15.45	7.90	14.58	7.32
	-12.6	-13	21.01	5.59	20.02	5.81	19.18	6.29	17.97	6.69	16.98	8.28	16.14	7.70
	-10.5	-11	22.26	6.03	21.31	6.25	20.52	6.73	19.35	7.07	18.40	8.66	17.61	8.08
	-9.5	-10	23.04	7.06	22.12	7.28	21.36	7.76	20.22	7.95	19.30	9.55	18.54	8.96
	-8.5	-9.1	23.66	7.94	22.78	8.16	22.04	8.64	20.93	8.71	20.05	10.32	19.31	9.72
	-7	-7.6	24.60	8.82	23.74	9.04	23.04	9.52	21.96	9.47	21.10	11.08	20.40	10.47
	-5	-5.6	26.00	9.26	25.17	9.48	24.50	9.96	23.45	9.84	22.63	11.46	21.95	10.85
	-3	-3.7	27.25	8.38	26.47	8.60	25.84	9.08	24.83	9.09	24.05	10.70	23.42	10.10
	0	-0.7	29.27	7.64	28.55	7.86	27.98	8.35	27.04	8.46	26.32	10.06	25.75	9.47
	3	2.2	31.46	6.76	30.77	6.98	30.23	7.47	29.31	7.70	28.62	9.30	28.08	8.71
	5	4.1	32.55	6.91	31.90	7.13	31.41	7.61	30.54	7.83	29.90	9.43	29.40	8.84
	7	6	34.98	7.26	34.37	7.48	33.90	7.96	33.06	8.13	32.45	9.73	31.98	9.14
	9	7.9	35.04	7.50	34.49	7.72	34.08	8.20	33.30	8.33	32.75	9.93	32.35	9.34
	11	9.8	36.45	7.64	35.98	7.86	35.67	8.35	34.98	8.46	34.51	10.06	34.20	9.47
	13	11.8	37.69	7.70	37.28	7.92	37.01	8.40	36.36	8.51	35.94	10.11	35.67	9.52
	15	13.7	38.94	7.60	38.57	7.82	38.34	8.30	37.74	8.42	37.37	10.02	37.14	9.43
	19	14.2	39.25	7.51	38.92	7.73	38.74	8.21	38.19	8.34	37.86	9.95	37.68	9.35
	21	15	39.88	7.38	39.61	7.60	39.49	8.08	38.99	8.23	38.72	9.83	38.60	9.24

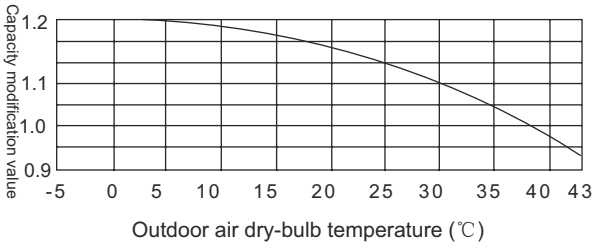
8. Performance curves

(1)Calculation methed of refrigerating capacity----refrigerating capacity to be known=refrigerating capacity*(A*B*C*D*E)W

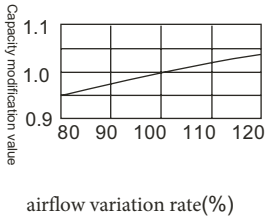
A.Capacity compensation value of indoor air wet-bulb temperature condition



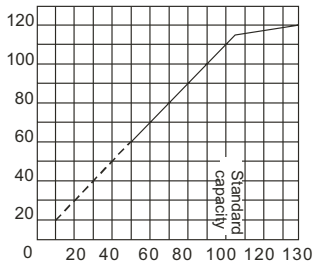
B.Capacity compensation value of outdoor air dry-bulb temperature condition



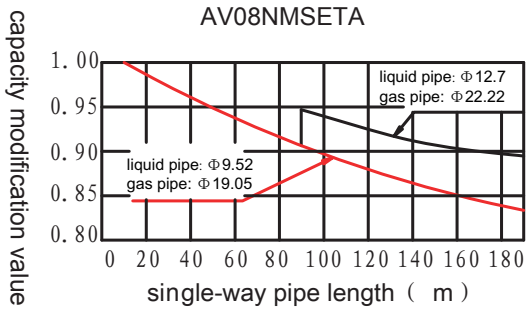
C.Capacity modification value under airflow variation rate of indoor unit group(only fro duct unit)

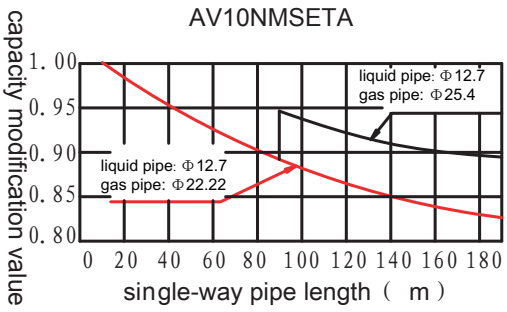


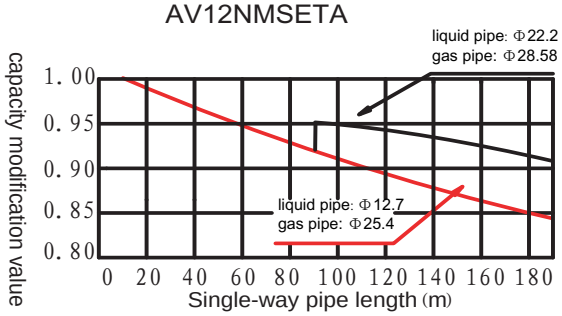
D.Capacity compensation suitable for total capability of indoor unit group



E.Fall of refrigerant pipe of indoor and outdoor unit,capacity compensation value of pipe length







Notes:

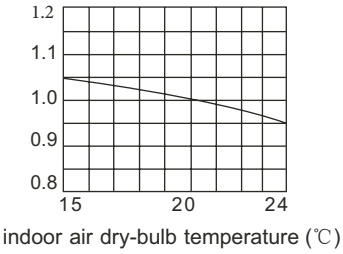
1.The refrigerant pipe should be thickened when the single way length is over 90m.

2.When in cooling mode, outdoor is lower than indoor; or when in heating mode, outdoor is higher than indoor, the compensation factor should be decreased the below value from the above figure.

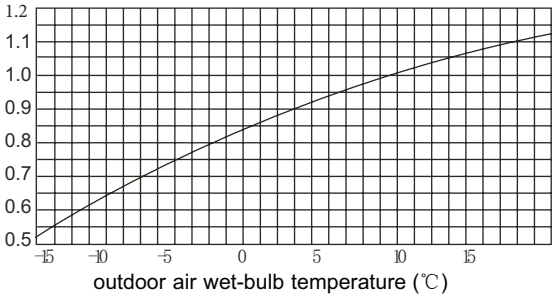
vertical height drop between indoor and outdoor	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
adjustment factor	0.003	0.006	0.009	0.012	0.015	0.018	0.021	0.024	0.027	0.030

(2)Calculation methed of refrigerating capacity----heating capacity to be known=refrigerating capacity*(A*B*C*D*E*F)W

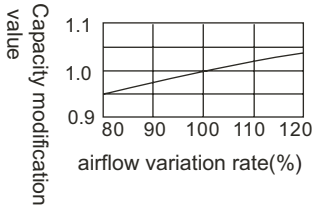
A.Capacity compensation value of indoor air dry-bulb temperature condition



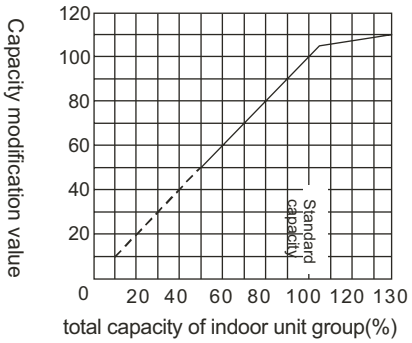
B.Capacity compensation value of outdoor air wet-bulb temperature condition



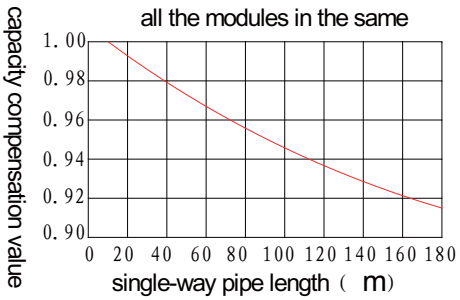
C.Capacity modification value under airflow variation rate of indoor unit group(only fro duct unit)



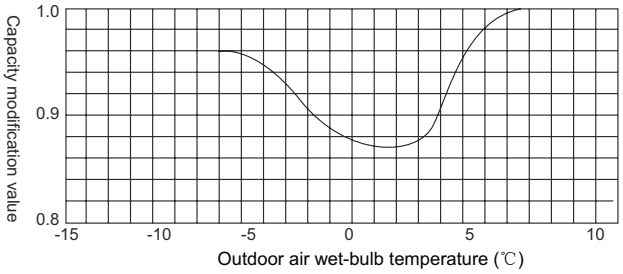
D.Capacity compensation suitable for total capability of indoor unit group



E.Capacity compensation value of pipe length between outdoors

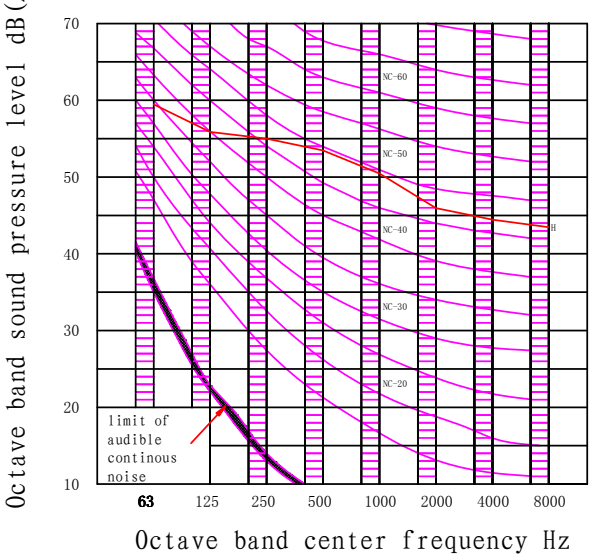


E.Capacity compensation value for defrost capability of outdoor heat exchanger

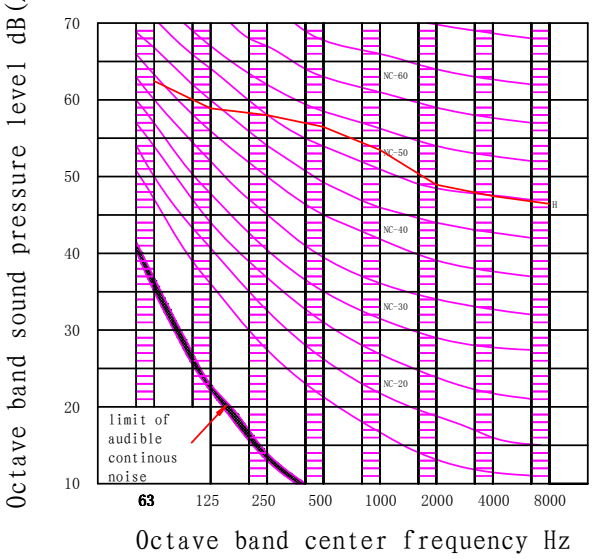


(3) Noise level

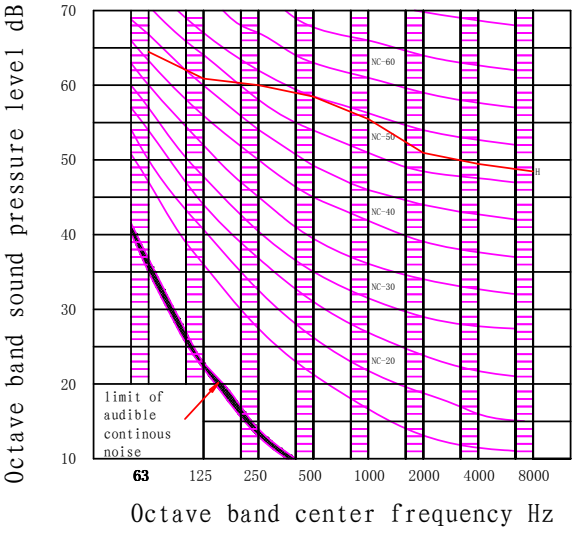
AV08NMSETA



AV10NMSETA



AV12NMSETA



9. Outdoor installation

- This manual should always be accessible and close to this air condition equipment.
- There are two types of indications, "⚠WARNING" and "⚠CAUTION". The indication preventing from death or heavy injury is listed as "⚠WARNING". Even the indication listed as "⚠CAUTION" may also cause serious accident. Both of them are related to safety, and should be strictly followed.
- After installation and start-up commissioning, please handover the manual to the user. The manual should be well kept in safe place and close to the unit.

⚠WARNING

- The installation or the maintenance should be performed by an authorized agency. The wrong operation of this air condition equipment may cause water leakage, electric shock or fire.
- Please install the unit on the top of a solid foundation or structure which is strong enough to support the unit.
- The installation of this air condition equipment should follow local construction codes.
- Use the right cable size, secure the terminal firmly, organize the cables well and make sure no tension is added on cables. Cable insulation should not be damaged. The incorrect installation may lead to overheat or fire.
- When installing or moving the unit, the refrigerant system should be vacuumed and recharged with R-410A refrigerant. If any other gas enters the system, it may lead to abnormal high pressure which may cause damage or injury.
- Please use the proper manifolds or branches during the system installation. The wrong parts may cause refrigerant leakage.
- Keep the drain pipe away from toxic gas vents to prevent possible pollution of indoor environment.
- During or after the installation, please check whether there is refrigerant leakage. If any leakage, please take any measures for ventilation. The refrigerant may be toxic at some concentration levels.
- The unit is not explosion-proof. Please keep it away from flammable gases.
- The drain pipe should be installed per this manual to ensure proper drainage. The pipe should be well insulated to avoid condensation. Wrong installation may lead to water leakage.
- Both liquid pipe and the gas pipe should be also well insulated. Not enough insulation may lead to system performance deterioration or humidity formation.
- This air condition equipment is not intended to be operated by persons with lack of experience and training, unless they have supervision or instruction concerning use of this air condition equipment.
- Please keep children away from this air condition equipment.

⚠CAUTION

- Grounding wire should be connected with the grounding bar. The grounding wire can not be connected to the gas pipe, water pipe, lightening rod or the telephone grounding wire. Improper grounding may cause electric shock.
- Units installed on roof should have appropriate access and handrail.
- Use the wrench to fasten the nut and flare at proper torque. Excessive torque may cause flared section to broke leading to refrigerant leakage.
- After refrigerant pipe installation, please take nitrogen leakage test to avoid refrigerant leakage.
- R-410A is the only permitted refrigerant.
- To avoid mischarging wrong refrigerant, the check valve diameter is changed for R-410A. To strengthen the pipe, the flared pipe dimension is also changed. Please use R-410A specified tools as shown below.

	R-410A specified tools	Remarks
1	Gauge manifold	Range:HP > 4.5MPa,LP > 2MPa
2	Charge hose	Pressure:HP:5.3MPa,LP:3.5MPa
3	Electronic weight for charging R410A	No other means permitted
4	Torque wrench	
5	Flare tool	
6	Copper pipe gauge for adjusting projecting margin	
7	Vacuum pump fitting	Vacuum pump must be equipped with check valve
8	Leakage detector	Only Helium detector permitted

- When charging refrigerant, the refrigerant must be in liquid state from the tank.
- To prevent EMC interference on other appliances, please keep indoor unit, outdoor unit, power cable and connecting wire at least 1m away from those appliances .
- Fluorescent lamp (reverse phase or rapid start type) may interfere the remote controller's signal. Please install indoor unit away from fluorescent lamp. The farther the better.

For installation, please review the items below:

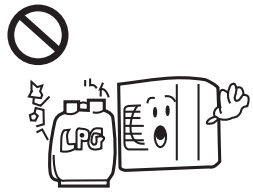
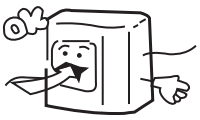
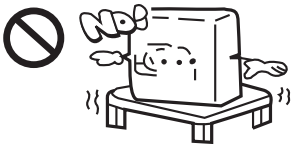
- Is the connected units quantity and the total capacity in the allowable range?
- Is the refrigerant pipe length in the limited range?
- Is the pipe size proper? And if the pipe installed horizontally?
- Is the branch pipe installed horizontally or vertically?
- Is the additional refrigerant counted correctly and weighed by the standard balance?
- Is there refrigerant leakage?
- Is all the indoor power supplies can be on/off simultaneously?
- Is the power voltage in compliance with the data marked on the rating label?
- Is the address of indoors has been set?

(1) Before installation

1) Before installation, check if the model, power supply, pipe, wires and parts purchased respectively are correct.
2) Check if the indoors and outdoors can be combined as the following.

Outdoor	Indoor	
Capacity(X 100W)	Indoor Qty	Total indoor capacity(X 100W)
AV08NMSETA	13	113~293
AV10NMSETA	16	140~364
AV12NMSETA	19	167~436

(2) Installation place selection

<table>
<tr>
<td>Air-conditioner can't be installed in the place with inflammable gas. Or it will cause fire hazard.
 
</td>
<td rowspan="2">The unit should be installed at the place with good ventilation. No obstacle at the air inlet/outlet. And no strong wind blows the unit.
 
The installation space refers to the latter info.
• The place where the water can flow fluently.
• The place where no other heat source will affect the unit.
• Pay attention to the snow against clogging the outdoor.
• In installation, install the anti-vibration rubber between the unit and the bracket.</td>
<td>The unit should be installed at the strong enough place. Or it will cause vibration and noise.
  </td>
</tr>
<tr>
<td>The unit should be installed at the place where the cold/hot air or noise will not interfere the neighbours.
 </td>
<td>• The unit is better not be installed at the below places, or it will cause damage.
• The place where there is corrosive gas (spa area etc).
• The place blowing salty air (seaside etc).
• Exsits the strong coal smoke.
• The place with high humidity.
• The place where there is device emitting Hertzian waves.
• The place where voltage changes greatly.</td>
</tr>
</table>

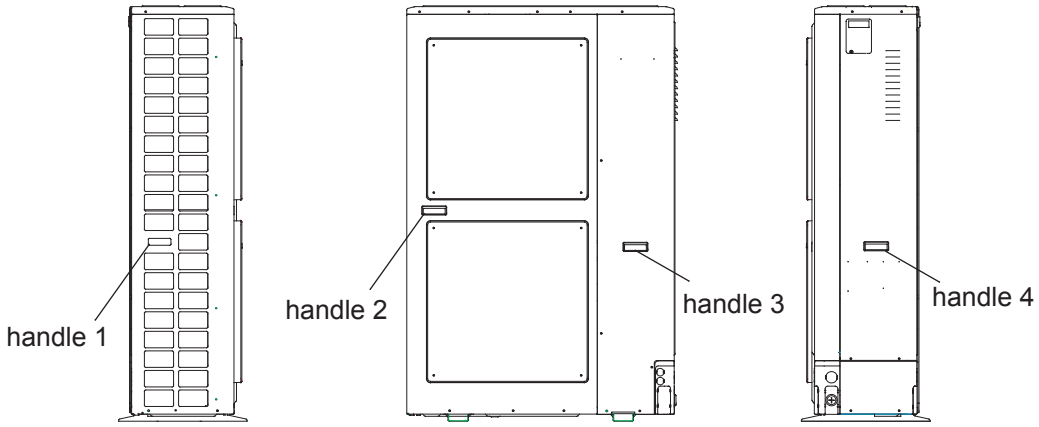
(3) Transportation and hoisting

Hoisting

- Please remove the outdoor unit to the installation location as far as possible near place befor open the packaging.
- Forbid on the equipments to place anything, need to use 2 ropes while promoting outdoor.
- Please according to following way hoisting outdoor:
  Ensure that the outdoor unit when hosting the level to rise slowly.
  Do not remove the packaging.
  When hoisting do not have to tie up the elevator to the unit hits on the packaging and the outside wrapping.
  When hoisting exterior must use the suitable protection.

Handling

Before the installation,outdoor do not deposit any material,otherwise likely has the fire or the accident.
When handling unit,please operate as shown in the following figure and note the following points
1.Forbids to demolish the wooden foundation.
2.Prevent the outdoor to incline.
3.Should be handling more than two.



Outdoor Installation

Installation location

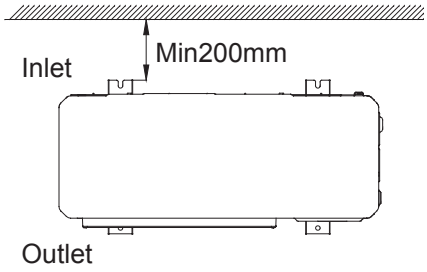
- Outdoor unit should be placed in well ventilated and dry place.
- Outdoor noise and exhaust should not affect neighbors and around the ventilation.
- Ensure the ground steadily reliable.
- Do not install the outdoor unit on high oil,salt spray or harmful gases.
- Don't being installed to electromagnetic wave can directly radiate an electricity box and keep off electromagnetic wave radiation possibly, at least more than 3 meters.
- When ice snow overlay area installs outdoor unit, please add to defend snow cover.
- Outdoor unit installed in the shade,avoiding direct sunlight or high temperature heat sources of radiation.
- Do not install in dusty or polluted place to prevent outdoor unit heat exchanger jam.
- The outdoor unit should install in the public unapproachable place.

Installation and maintenance space

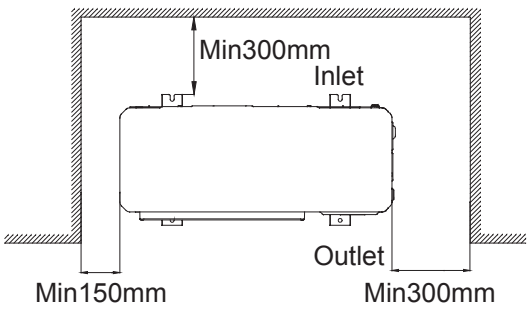
As shown below, install the outdoor unit should allow sufficient space for handing and maintenance.

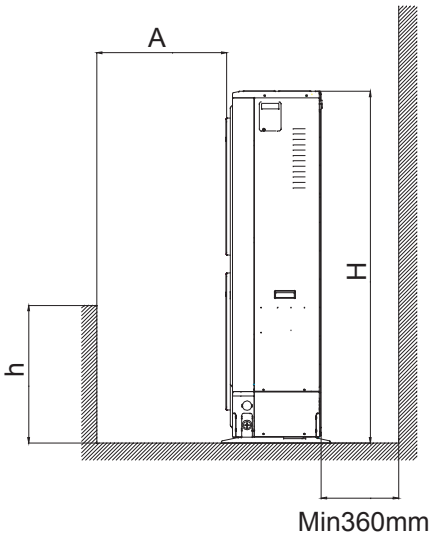
Case 1: stumbling block on the inlet ,also upside opens.

Single installation around the opening

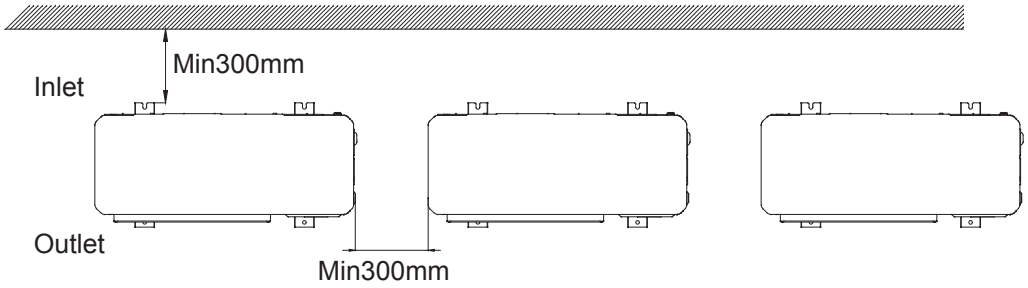


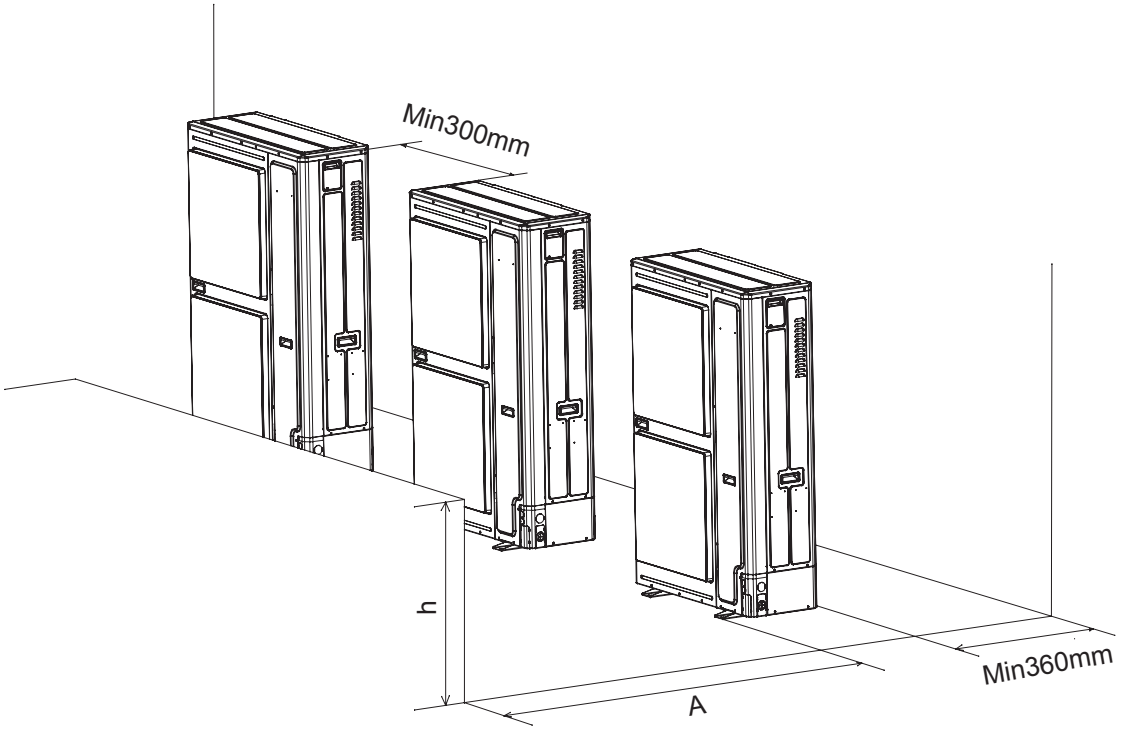
Single installation around the closed





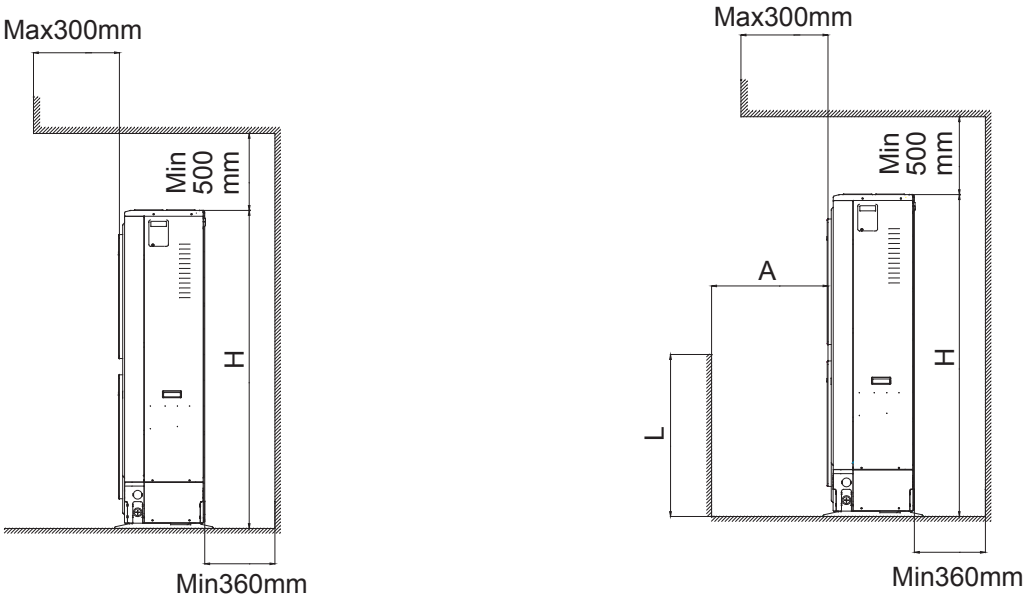
Multi Outdoor



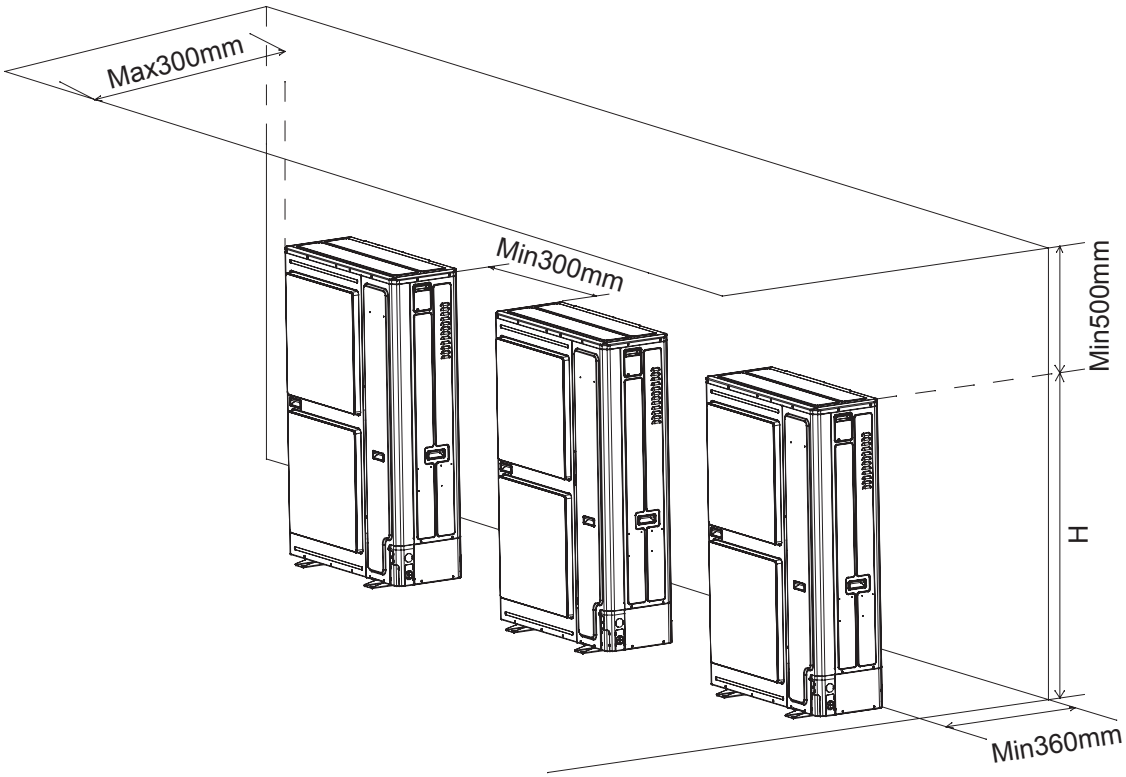


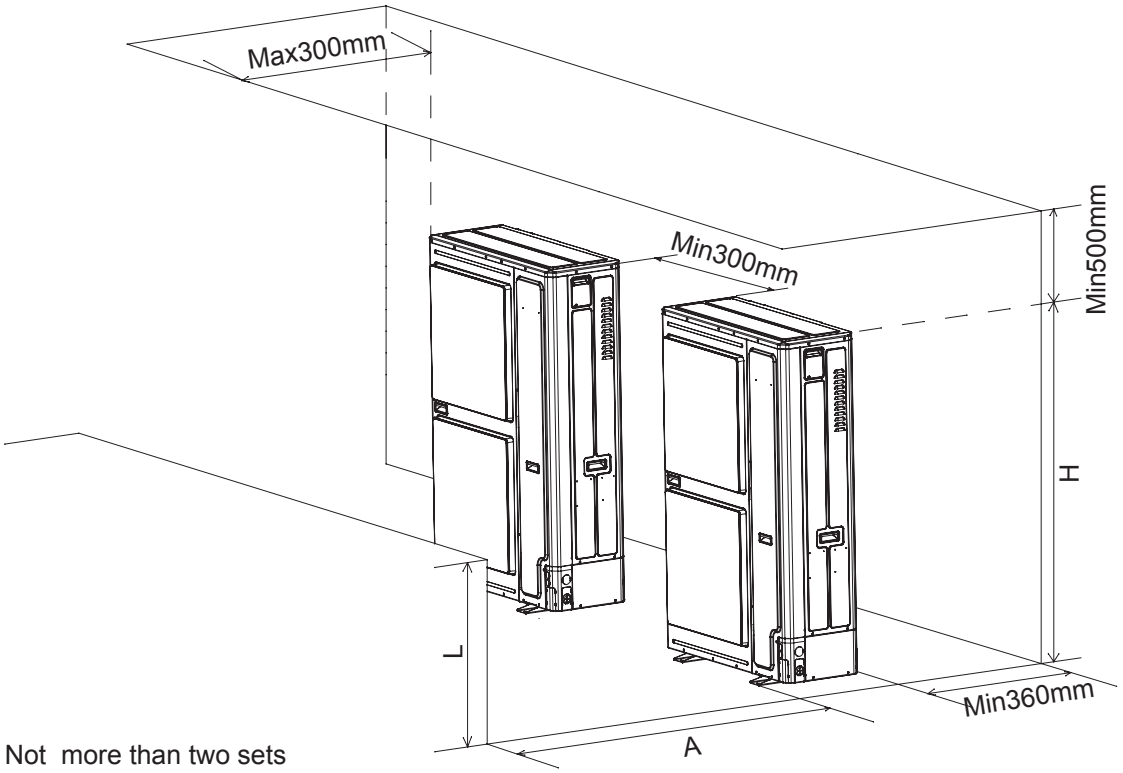
Case 2: stumbling block on the inlet and top side

Single Outdoor



Multi Outdoor

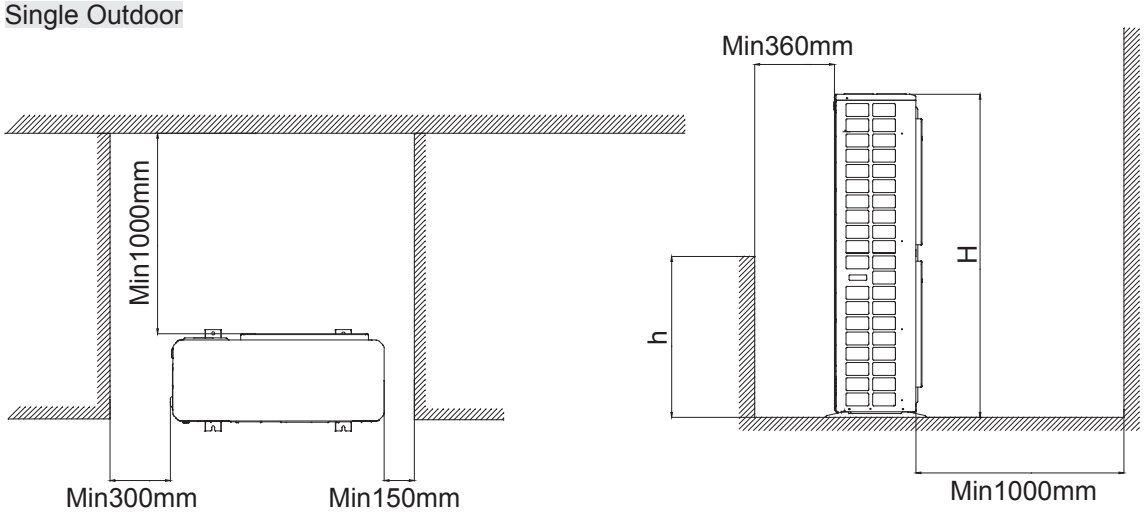




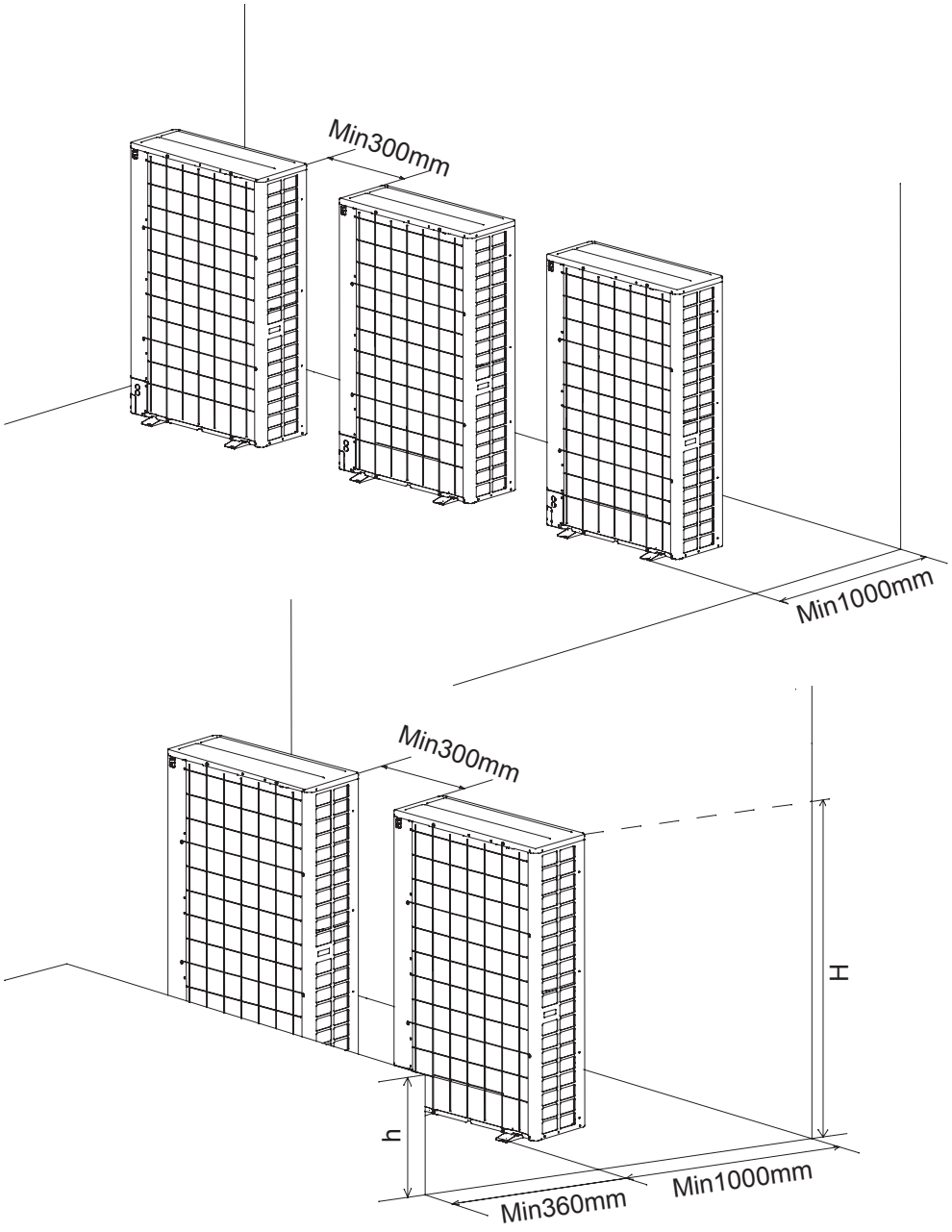
Not more than two sets

Case 3:stumbling block on the outlet, both right and left side

Single Outdoor



Multi Outdoor

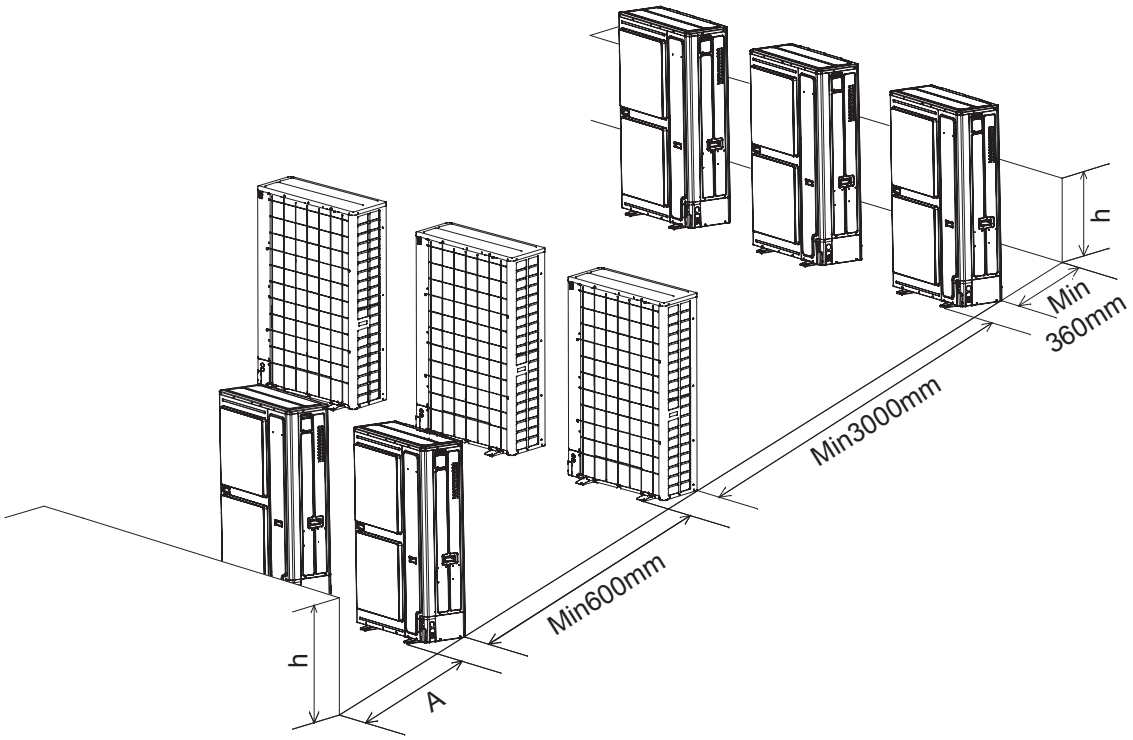


If h>H, please set the outdoor on the foundation to make sure H≥h.
H=The height of outdoor and foundation

h	A
0<h≤1/2H	Over 600
1/2H<h≤H	Over 1400

Note: Avoid making air short cycle in any case.

Multi Row Outdoor



Note:
Make sure the distance at least 300mm between two neighbor units and no stumbling block.

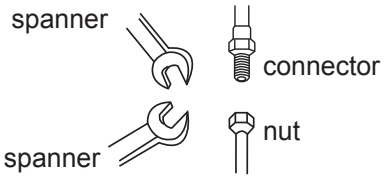
h	A
0<h≤1/2H	Over 600
1/2H<h≤H	Over 1400

A. Refrigerant pipe connection

Pipe connection method:

- To ensure the efficiency, the pipe should be as short as possible.
- Daub the refrigerant oil on the connector and the flare nut.
- When bending the pipe, the bending semi-diameter should be as large as possible against the pipe being broken or bent.
- When connecting the pipe, aim at the center to thread the nut by hand and tighten it with the double spanners.
- Fastening torque please refers to "pipe specs and fastening torque" on page 15.
- Don't let the impurity such as sand, water etc into the pipe. Antifouling measures refer to page 13.

When fastening and loosing the nut, operate with double spanners, because only one spanner cannot execute firmly.



If threading the nut as not aiming at the center, the screw thread will be damaged, further it will cause leakage.

Cautions in piping installation:

1. When welding the pipe with hard solder, charge nitrogen into the pipe against oxidation. The pressure gauge should be set at 0.02MPa.Perform the procedure with nitrogen circulation. Otherwise, the oxide film in the pipe may clog the capillary and expansion valve resulting in accident.
2. The refrigerant pipe should be clean. If the water and the other impurity enter the pipe, charge the nitrogen to clean the pipe. The nitrogen should flow under the pressure of about 0.5Mpa and when charging the nitrogen, stop up the end of the pipe by hand to enhance the pressure in the pipe, then loose the hand (meanwhile stop up the other end).
3. The piping installation should be executed after the stop valves are closed.
4. When welding the valve and the pipe, cool down the valve with wet towel.
5. When the connection pipe and the branch pipe need to be cut down, please use the special shears and cannot use the saw.
6. When welding copper pipe, use the phosphor copper welding rod without any welding flux. (welding flux will damage the piping system. The welding flux containing chlorine will corrode pipe, especially, the welding flux with fluorin will damage refrigeration oil.)

Pipe material and specs selection

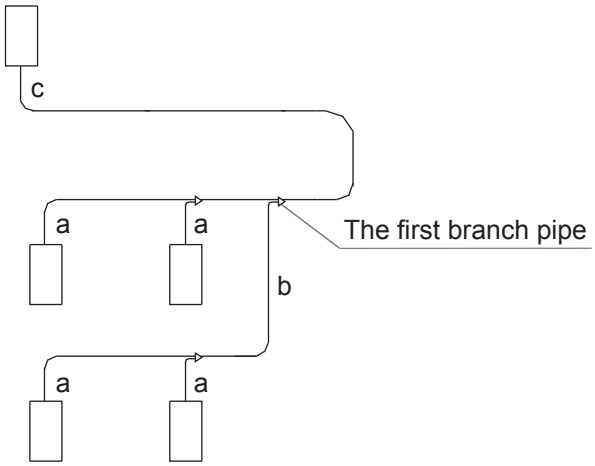
1. Please select the refrigerant pipe of the below material.
   Material: the phosphoric oxidize seamless copper pipe, model: C1220T-1/2H (diameter is over 19.05); C1220T-0(diameter is below 15.88).
2. Thickness and specs:
   Confirm the pipe thickness and specs according to the pipe selection method(the unit is with R410A, if the pipe over 19.05 is 0-type, the pressure preservation will be bad, thus it must be 1/2H type and over the min. thickness.
3. The branch pipe and the gather pipe must be from Haier.
4. When installing the stop valve, refer to the relative operation instruction.
5. The pipe installation should be in the allowable range.
6. The installation of branch pipe and gather pipe should be performed according to the relative manual.

Anti-fouling measures

First, clean the pipe.

Position	Installation period	Measures
Outdoor	More than 1 month	Flat the pipe end
	Less than 1 month	Flat the pipe end or seal with adhesive tape
Indoor	Nothing to do with period	

Pipe specification:



1. Pipe "a" diameter (between indoor and branch pipe) depends on indoor pipe

Indoor (x100W)	Gas pipe (mm)	Liquid pipe (mm)
22~28	Ø9.52	Ø6.35
36~56	Ø12.7	Ø6.35
71~140	Ø15.88	Ø9.52
226~280	Ø25.4	Ø9.52

Note:
AS072 AS092 gas pipe: Ø12.7mm
AS182 gas pipe/ liquid pipe: Ø15.88mm/9.52mm

2. Pipe "b" diameter (between branch pipes)

Total indoor capacity after the branch pipe (kW)	Gas pipe (mm)	Liquid pipe (mm)
<16.8KW	Ø15.88	Ø9.52
16.8KW≤X<22.4KW	Ø19.05	Ø9.52
22.4KW≤X<33.0KW	Ø22.22	Ø9.52
33.0KW≤X<47.0KW	Ø28.58	Ø12.7

Note:
Adjust the diameter on field (changing pipe is needed)
When the latter indoor total capacity is less than 14.0kw, pipe b will use the specs as the pipe a.

3. Pipe "c" diameter (main pipe, between outdoor gather pipe and the first branch pipe)

Outdoor capacity (kW)	Main pipe		Enlarged main pipe	
	Gas pipe (mm)	Liquid pipe (mm)	Gas pipe (mm)	Liquid pipe (mm)
22.4	Ø22.22	Ø9.52	Ø22.22	Ø12.7
28.0	Ø22.22	Ø9.52	Ø25.4	Ø12.7
33.5	Ø25.4	Ø12.7	Ø28.58	Ø12.7

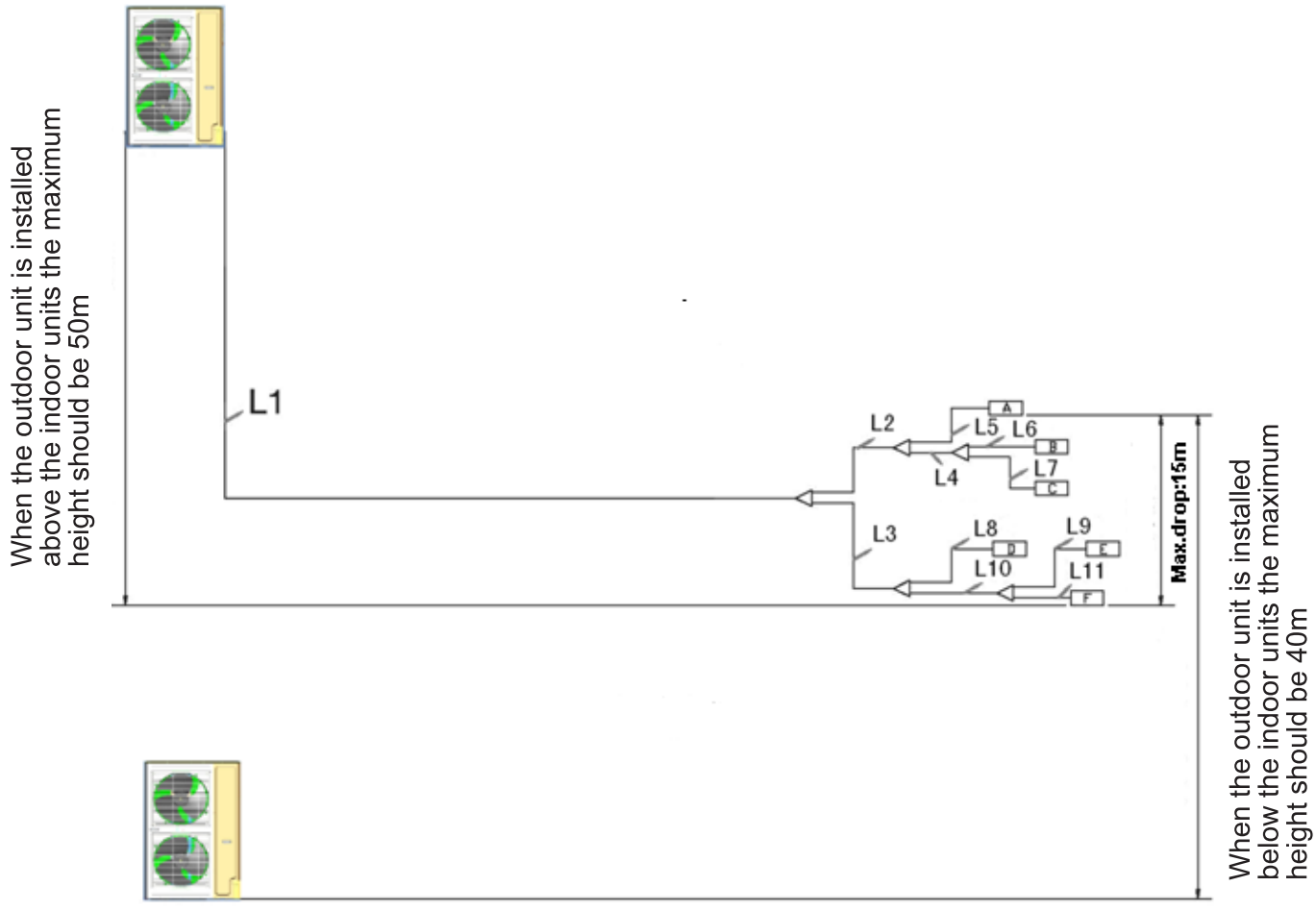
Note:
When the distance from outdoor to the longest indoor is over 90m, the main pipe should be enlarged diameter.

Copper pipe selection:

Material	O type pipe: Soft pipe			
Pipe diameter (mm)	Ø6.35	Ø9.52	Ø12.7	Ø15.88
Thickness(mm)	0.8	0.8	1.0	1.0

Material	Hard pipe				
Pipe diameter (mm)	Ø19.05	Ø22.22	Ø25.4	Ø28.58	Ø31.8
Thickness(mm)	1.0	1.0	1.0	1.0	1.1

Long pipe and high drop



	Max. length	Pipe in above figure
Single way total pipe length	300	L1+L2+ L3+ L4+ L5+ L6+ L7+L8+L9+ L10+ L11
Single way max. pipe length	150	L1+L3+L10+L11
Max. pipe length after 1st branch pipe	40	L3+L10+L11
Main pipe length	110	L1
Height difference between indoors	15	_
Pipe length between indoor unit and the nearest branch	30	_

Unit pipe spec and connection method (unit: mm)

A. Outdoor unit

Mobel	Gas pipe side		Liquid pipe side	
	Diameter (mm)	Connecting method	Diameter (mm)	Connecting method
AV08NMSETA	Ø19.05	Flared joint	Ø9.52	Flared joint and Brazing
AV10NMSETA	Ø22.22	Flared joint and Brazing	Ø12.7	Flared joint
AV12NMSETA	Ø25.4		Ø12.7	

B. Indoor unit

Model Capacity	Gas pipe side		Liquid pipe side	
	Diameter (mm)	Connecting method	Diameter (mm)	Connecting method
07	Ø9.52	Braze	Ø6.35	Flared
09	Ø9.52		Ø6.35	
12	Ø12.7		Ø6.35	
16	Ø12.7		Ø6.35	
18	Ø12.7		Ø6.35	
24	Ø15.88		Ø9.52	
28	Ø15.88		Ø9.52	
30	Ø15.88		Ø9.52	
38	Ø15.88		Ø9.52	
48	Ø15.88		Ø9.52	
72	Ø25.4		Ø9.52	
96	Ø25.4		Ø9.52	

Note:
AS072, AS092 gas pipe: Ø12.7mm; AS182 gas pipe/ liquid pipe: Ø15.88/9.52mm

C. Pipe spec and the torque

Diameter (mm)	Torque(N·m)
Ø6.35	14~18
Ø9.52	34~42
Ø12.7	49~61
Ø15.88	68~82
Ø19.05	84~98

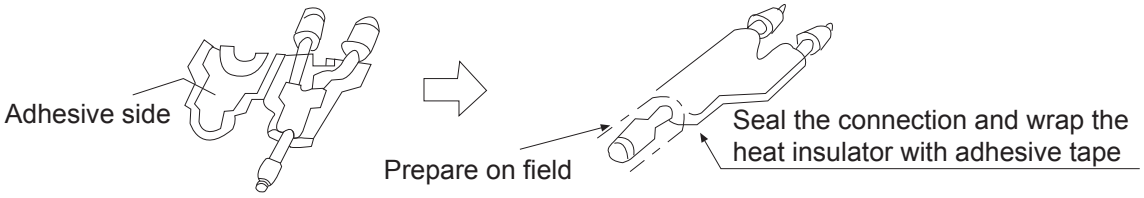
Branch pipe

Branch pipe selection:

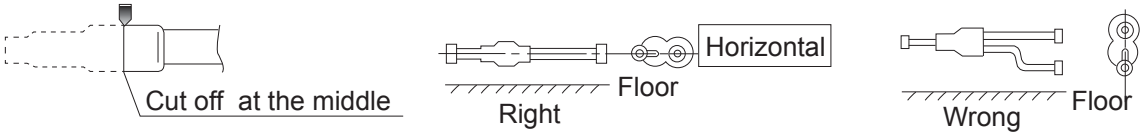
Total indoor capacity(100W)	model(optional)
Less than 335	FQG-B335A
More than 335, less than 506	FQG-B506A

Outdoor unit type
The master unit will choose the closest one to the 1st branch pipe.

Note:
1. When connecting the outdoor branch pipe and the outdoor, please pay attention to the outdoor pipe dimension.
2. When adjusting the diameter among outdoor branch pipe and among the units, please must execute at the branch pipe side.
3. Please install the outdoor branch pipe (gas/liquid side) in horizontal or vertical direction.
4. When welding with hard solder, please must blow nitrogen. If not, a number of oxide will be produced and cause heavy damage.Besides,to prevent water and dust into the pipe, please make the brim as outer roll.



Cut off pipe with the cutter



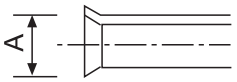
Pipe installation

When doing the piping connection, please do the following:

- Please don't let the pipe and the parts in the unit collide each other.
- When connecting the pipes, close the valves fully.
- Protect the pipe end against the water, impurity into the pipes (welding after being flat, or being sealed with adhesive tape).
- Bend the pipe as large semi-diameter as possible(over 4 times of the pipe diameter).
- The connection between outdoor liquid pipe and the distributing pipe is flared type. Please expand the pipe with the special tool for R410A after installing the expanding nut. But if the projecting pipe length has been adjusted with the copper pipe gauge, you can use the original tool to expand the pipe.

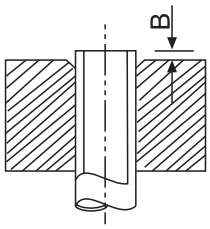
- Since the unit is with R410A, the expanding oil is ester oil, not the mineral oil.
- When doing the flare connection, please do the following: When connecting the expanding pipe, fasten the pipes with double-spanner. The torque refers to the former info.

Expanding pipe:A(mm)



Pipe outer diameter (mm)	A $^{0}_{-0.4}$
Ø6.35	9.1
Ø9.52	13.2
Ø12.7	16.6
Ø15.88	19.7

Projecting length of pipe to be expanded:B(mm)

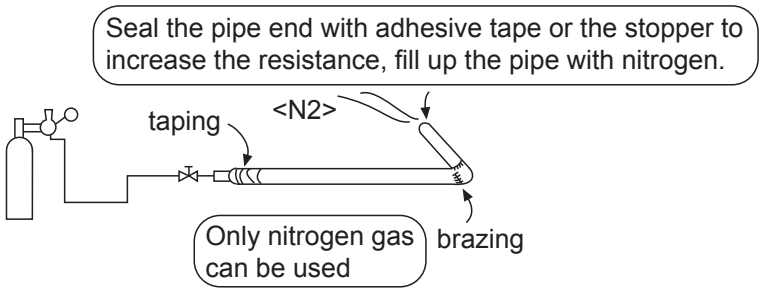


Pipe outer diameter (mm)	When it is hard pipe	
	Special tool for R410A	The former tool
Ø6.35	0-0.5	1.0-1.5
Ø9.52		
Ø12.7		
Ø15.88		

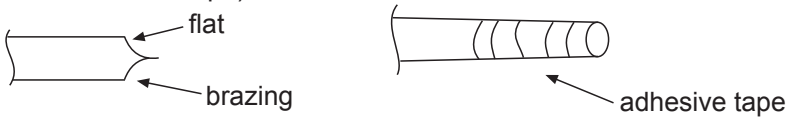
- The outdoor gas pipe and the refrigerant distributing pipe, as well the refrigerant distributing pipe and the branch pipe should be welded with hard solder.
- When doing the braze connection, please do the following: Brazing the pipe at the same time charge the nitrogen. Or it will cause a number of impurity (a film of oxidation) to clog the capillary and the expansion valve, further cause the deadly failure.

Operation procedure

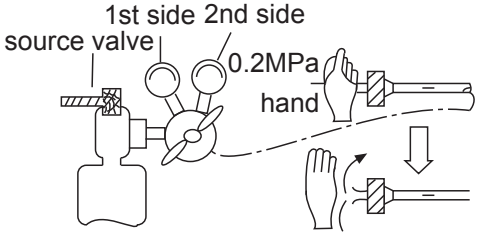
- Brazing the pipe at the same time charge the nitrogen. Or it will cause a number of impurity (a film of oxidation) to clog the capillary and the expansion valve, further cause the deadly failure.


Seal the pipe end with adhesive tape or the stopper to increase the resistance, fill up the pipe with nitrogen.
taping
<N2>
Only nitrogen gas can be used
brazing

- Protect the pipe end against the water, impurity into the pipes (welding after being flat, or being sealed with adhesive tape).



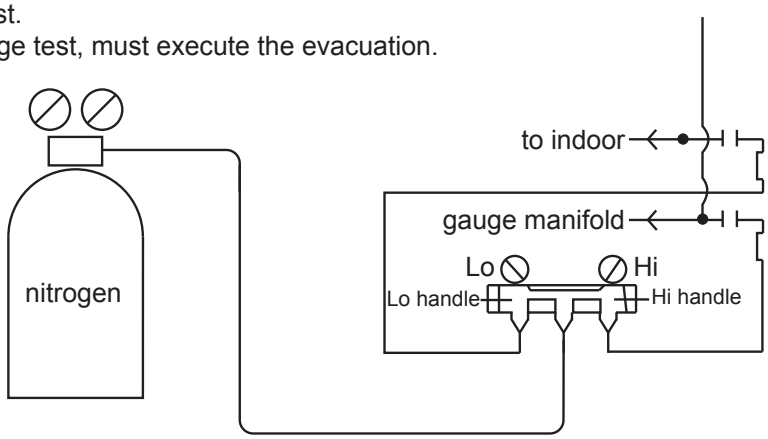
- The refrigerant pipe should be clean. The nitrogen should flow under the pressure of about 0.5Mpa and when charging the nitrogen, stop up the end of the pipe by hand to enhance the pressure in the pipe, then loose the hand (meanwhile stop up the other end).



- When connecting the pipes, close the valves fully.
- When welding the valve and the pipes, use the wet cloth to cool down the valve and the pipes.

B. Leakage test

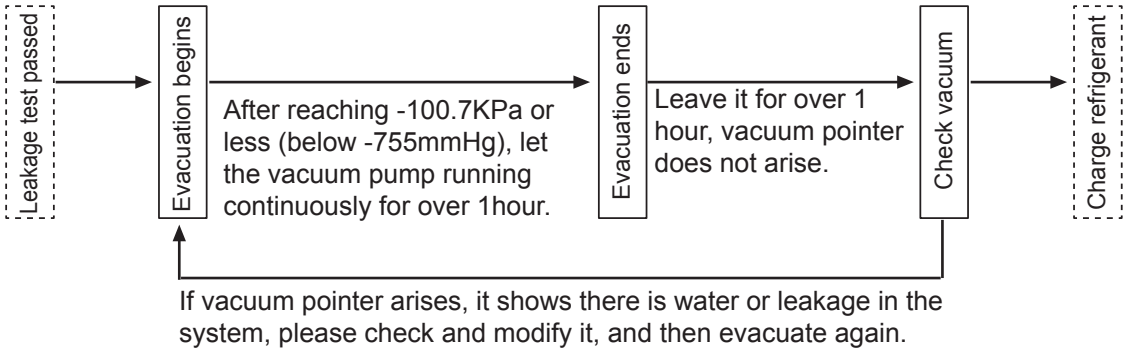
1. The outdoor unit has been executed the leakage test in the factory. The pipe should be executed leakage test individually and forbidden to test after connecting with stop valve.
2. Refer to the below figure to charge the nitrogen into the unit to take a test. Never use the chlorin, oxygen, flammable gas in the leakage test. Apply pressure both on the gas pipe and the liquid pipe.
3. Apply the pressure step by step to the target pressure.
   a. Apply the pressure to 0.5MPa for more than 5 minutes, confirm if pressure goes down.
   b. Apply the pressure to 1.5MPa for more than 5 minutes, confirm if pressure goes down.
   c. Apply the pressure to the target pressure (4.15MPa), record the temp. and the pressure.
   d. Leave it at 4.15MPa for over 1 day, if pressure does not go down, the test is passed. Meanwhile, when the temp. changes for 1degree, pressure will change 0.01MPa as well. Correct the pressure.
   e. After confirmation of a~d, if pressure goes down, there is leakage. Check the brazing position, flared position by laying on the soap. modify the leakage point and take another leakage test.
4. After leakage test, must execute the evacuation.



C. Evacuation

Evacute at the check valve of liquid stop valve and both sides of the gas stop valve. The oil equalization pipe also must be vacuum (executed at the oil equalization pipe check valve respectively).

Operation procedure:


Leakage test passed
Evacuation begins
After reaching -100.7KPa or less (below -755mmHg), let the vacuum pump running continuously for over 1hour.
Evacuation ends
Leave it for over 1 hour, vacuum pointer does not arise.
Check vacuum
Charge refrigerant
If vacuum pointer arises, it shows there is water or leakage in the system, please check and modify it, and then evacuate again.

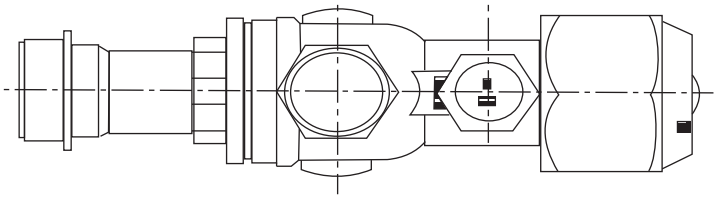
Because the unit is with refrigerant R410A, the below issues should be paid attention:

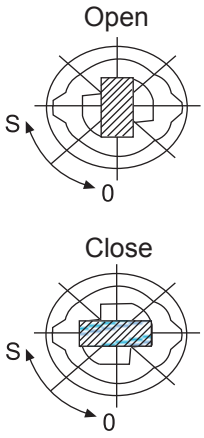
- To prevent the different oil into the pipe, please use the special tool for R410A, especially for gauge manifold and charging hose.
- To prevent the compressor oil into the refrigerant cycle, please use the anti-counter-flow adapter.

D. Check valve operation

Open/close method:

- Take down the valve cap, gas pipe turns to "open" state as right figure.
- Turn the liquid pipe with hexangular spanner until it stops. If opening the valve strongly, the valve will be damaged.
- Tighten the valve cap.





Tighten torque as the table below:

Tighten torque N·m			
	Shaft (valve body)	Cap (cover)	T-shape nut (check joint)
For gas pipe	8~9	22~27	8~10
For liquid pipe	5~6	13~16	8~10

E. Additional refrigerant charging

Charge the additional refrigerant as liquid state with the gauge.
If the additional refrigerant can not be charged totally when the outdoor stops, charge it at the trial mode.
If the unit runs for a long period in the state of lack of refrigerant, compressor will occur failure.
(the charging must be finished within 30 minutes especially when the unit is running, meanwhile charging the refrigerant).

The unit is charged only part of the refrigerant at the factory, also need additional refrigerant at the installation site.
W1: Refrigerant charging volume to outdoor unit at factory.
W2: Refrigerant charging volume to outdoor unit on site.
W3: Refrigerant charging volume to liquid pipe base on different piping length calculation.
W3=actual length of liquid pipe×additional amount per meter liquid pipe=
L1×0.35+L2×0.25+L3×0.17+L4×0.11+L5×0.054+L6×0.022

L1: Total length of 22.22 liquid pipe;
L2: Total length of 19.05 liquid pipe;
L3: Total length of 15.88 liquid pipe;
L4: Total length of 12.7 liquid pipe;
L5: Total length of 9.52 liquid pipe;
L6: Total length of 6.35 liquid pipe;
Total refrigerant volume charging on site during installation=W2+W3
W: Total refrigerant volume charging on site for maintenance.

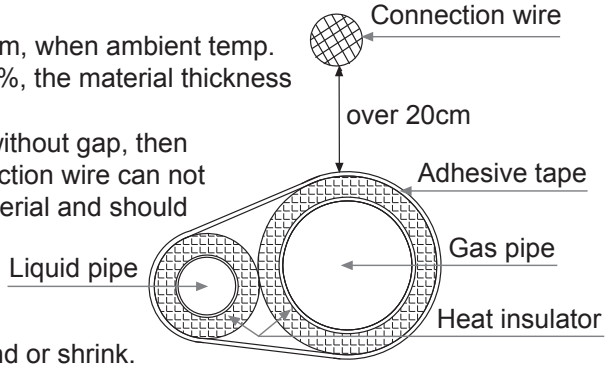
Refrigerant record form						
Model	W1: Refrigerant charging volume to outdoor unit at factory	W2: Refrigerant charging volume to outdoor unit on site	W3: Refrigerant charging volume to liquid pipe base on different piping length calculation		Total refrigerant volume charging on site during installation	W: Total refrigerant volume charging on site for maintenance
			Liquid pipe diameter (mm)	Additional refrigerant amount (kg)		
AV08NMSETA	7.4kg	0kg	Ø6.35	0.022kg/m×__m=__kg	W2+W3=___kg	W1+W2+W3=___kg
AV10NMSETA		0kg	Ø9.52	0.054kg/m×__m=__kg		
AV12NMSETA		0kg	Ø12.7	0.11kg/m×__m=__kg		
			Ø15.88	0.17kg/m×__m=__kg		
			Ø19.05	0.25kg/m×__m=__kg		
			Ø22.22	0.35kg/m×__m=__kg		
			W3=___kg			

Note:

- To prevent the different oil into the pipe, please use the special tool for R410A, especially for gauge manifold and charging hose.
- Mark the refrigerant type in different colour on the tank. R410A is pink.
- Must not use the charging cylinder, because the R410A will change when transferring to the cylinder.
- When charging refrigerant, the refrigerant should be taken out from the tank as liquid state.
- Mark the counted refrigerant volume due to the distributing pipe length on the label.

Heat insulation

- Gas pipe and liquid pipe should be heat insulated separately.
- The material for gas pipe should endure the high temperature over 120℃.
- That for liquid pipe should be over 70℃.
- The material thickness should be over 10mm, when ambient temp. is 30℃, and the relative humidity is over 80%, the material thickness should be over 20mm.
- The material should cling the pipe closely without gap, then be wrapped with adhesive tape. The connection wire can not be put together with the heat insulation material and should be far at least 20cm.

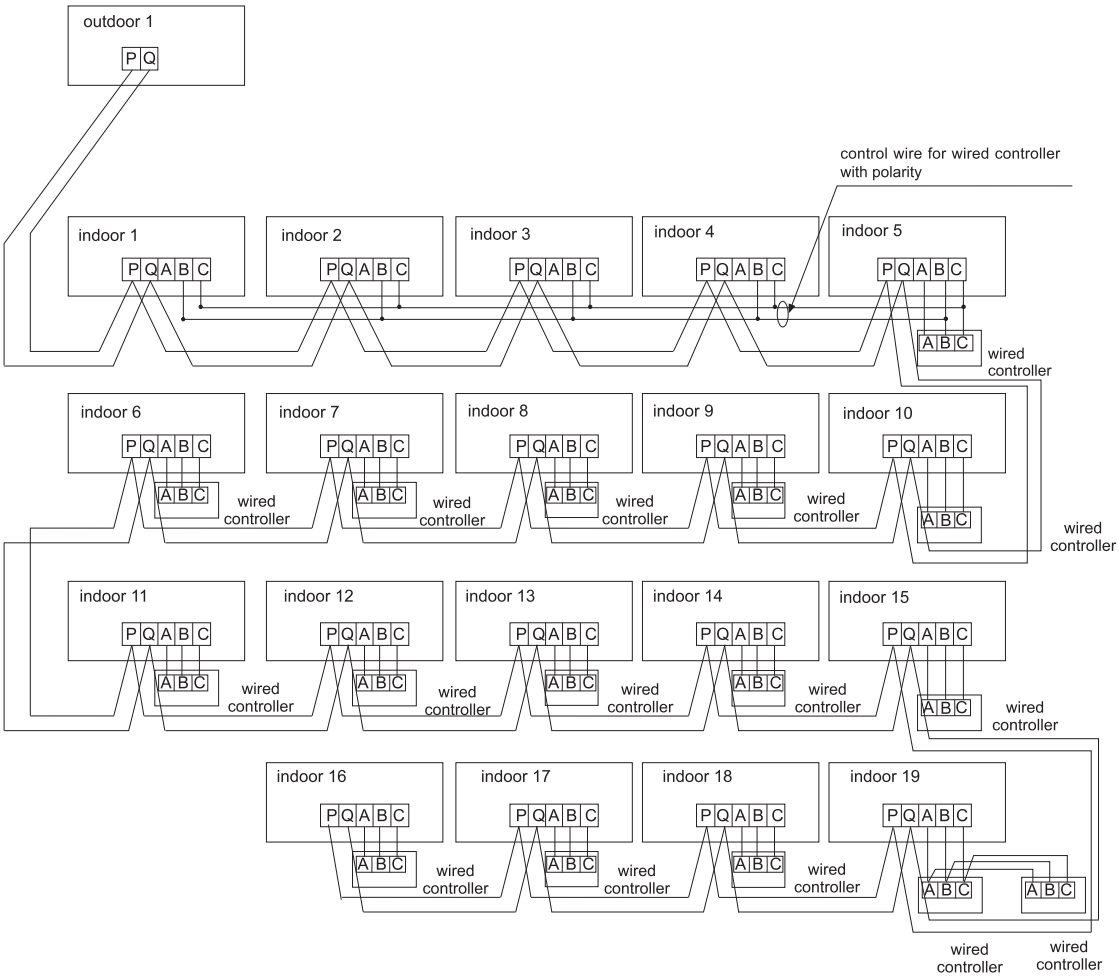


Fix the refrigerant pipe

- In operation, the pipe will vibrate and expand or shrink. If not being fixed, the refrigerant will focus on one part to cause the broken pipe.
- To prevent the central stress, fix the pipe for every 2-3m.

10. Electric installation

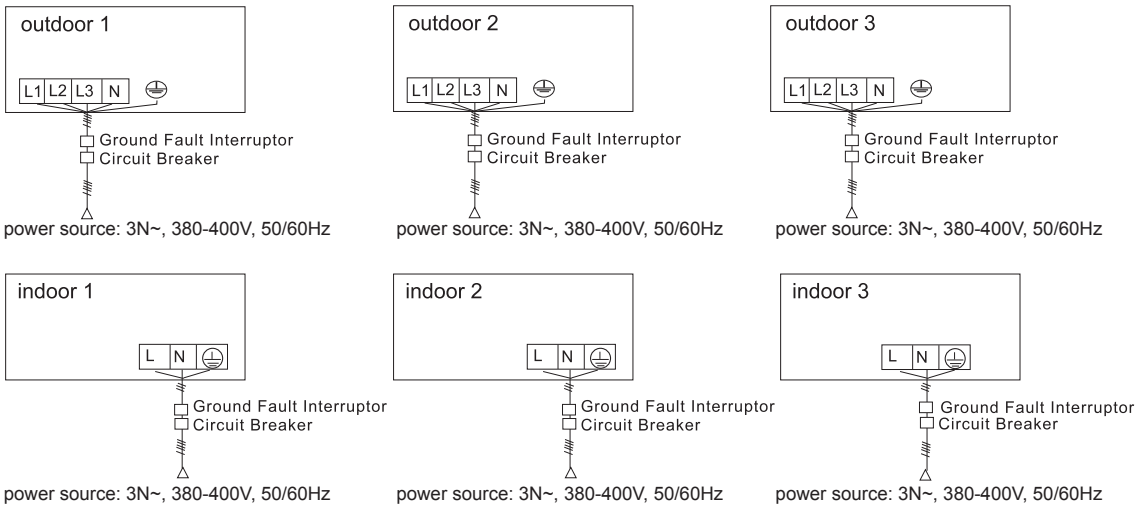
Communication wiring figure



The outdoor and all indoor units are in parallel through 2 non-polar wires.
Three wiring methods between wired controller and indoor unit:
A. 1 to multi (group control): one wired controller controls 2~16 indoors, as shown in above figure, indoor 1~indoor 5: indoor 5 is wired control master unit, the others are wired control slave units. Wired controller and the master indoor (directly connected to wired controller) is connected by 3 polar wires; the other indoors and the master indoors are connected by 2 polar wires.
B. 1 to 1 (one wired controller controls one indoor): as shown in above figure, indoor 6~ indoor 19, indoor and wired controller are connected by 3 polar wires.
C. 2 to 1 (two wired controller controls one indoor): as shown in above figure, indoor 19. Either of wired controllers can be set as master wired controller, and the other is slave wired controller. Master/slave wired controller, and master/indoor are connected by 3 polar wires.
When indoor is controlled by remote controller, refer to the "wired control master unit/wired control slave unit/remote control unit table".A, B, C on signal terminal block need not wires and not connect the wired controller.

Power wiring figure

Please make sure that when the unit is running, the input voltage is no less than 380V;
if it is lower than 380V,the unit may run abnormal.



- Indoor and outdoor use their individual power source.
- All indoors use one power source.
- Must install the leakage breaker and the over current breaker, or electric shock will occur.

Outdoor power source and power cable

Item / Model		Power source	Power cable section (mm^2)	Wire length (m)	Circuit breaker (A)	Rated current of residual circuit breaker(A) Ground fault interruptor(mA) response time(S)	Ground wire	
							Section (mm^2)	Screw
Individual power	AV08NMSETA	3N~, 380-400V, 50/60 Hz	6	60	40	40A 30mA below 0.1S	3.5	M5
	AV10NMSETA		10	60	40	40A 30mA below 0.1S	3.5	M5
	AV12NMSETA		10	60	40	40A 30mA below 0.1S	3.5	M5

- Power cable must be fixed firmly.
- Each outdoor must be earthed well.
- When power cable exceeds the range, thicken it appropriately.

Indoor power source and communication wiring

Item Indoor total current (A)	Power cable section (mm^2)	Wire length (m)	Rated current of overcurrent breaker (A)	Rated current of residual circuit breaker(A) Ground fault interruptor(mA) response time(S)	Communication wire section	
					Outdoor/ indoor (mm^2)	Indoor/ indoor (mm^2)
<10	2	20	20	20A, 30mA, below 0.1s	2-core × (0.75-2.0mm^2) shielded wire	
≥10 and <15	3.5	25	30	30A, 30mA, below 0.1s		
≥15 and <22	5.5	30	40	40A, 30mA, below 0.1s		
≥22 and <27	10	40	50	50A, 30mA, below 0.1s		

- Power cable and communication wire must be fixed firmly.
- Each indoor must be grounded well.
- When power cable exceeds the range, increase the gauge appropriately.
- Shielded layer of communication wires must be connected together and be earthed at single point.
- Communication wire total length cannot exceed 1000m.

Communication wire for wired controller

Wire length(m)	Wire spec	Wire length(m)	Wire spec
<100	0.3mm^2 ×(3-core) shielded wire	≥300 and <400	1.25mm^2 ×(3-core) shielded wire
≥100 and <200	0.5mm^2 ×(3-core) shielded wire	≥400 and <600	2mm^2 ×(3-core) shielded wire
≥200 and <300	0.75mm^2 ×(3-core) shielded wire		

- Shielded layer of communication wire must be grounded at one end.
- The total length cannot exceed 600m.

11.Trial operation

5-minute delay function

- If starting up the unit after being powered off, the compressor will run about 5 minutes later against being damaged.

Cooling/heating operation

- Indoor units can be controlled individually, but cannot run in cool and heat mode at the same time. If the cool mode and the heat mode are existing simultaneously, the unit set latter will be standby, and the unit set earlier will run normally.
- If the A/C manager sets the unit at cooling or heating mode fixedly, the unit can not run at the other modes.

Heating mode characteristic

- In operation if outdoor temp. arises, indoor fan motor will turn to low speed or stop.

Defrosting in heating mode

- In heating mode, outdoor defrosting will affect the heating efficiency. The unit will defrost for about 2~10 minutes automatically, at this time, the condensate will flow from outdoor, also in defrosting, the vapour will appear at outdoor, which is normal. Indoor motor will run at low speed or stop, and outdoor motor will stop.

The unit operation condition

- To use the unit properly, please operate the unit under the allowed condition range.
  If operating beyond the range, the protection device will act.
- The relative humidity should be lower than 80%. If the unit runs at the humidity over 80% for a long period, the dew on the unit will drop down and the vapour will be blowed from air outlet.

Protection device (such as high pressure switch)

- High pressure switch is the device which can stop the unit automatically when the unit runs abnormally.
  When the high pressure switch acts, the cooling/heating mode will stop but the running LED on wired controller will be light still. The wired controller will display failure code.
- When the following cases occur, the protection device will act:
  In cooling mode, air outlet and air inlet of outdoor are clogged.
  In heating mode, indoor filter is sticked with duct; indoor air outlet is clogged.
  When protection device acts, please cut off the power source and re-start up after eliminating the trouble.

When power failure

- When power is failure in running, all the operations will stop.
- After being electrified again, if with re-satrt up function, the unit can resume to the state before power off automatically; if without re-satrt up function, the unit needs to be switched on again.
- When abnormal occurs in running because of the thunder, the lightning, the interference of car or radio, etc, please cut off the power source, after eliminating the failure, press "ON/OFF" button to start up the unit.

Heating capacity

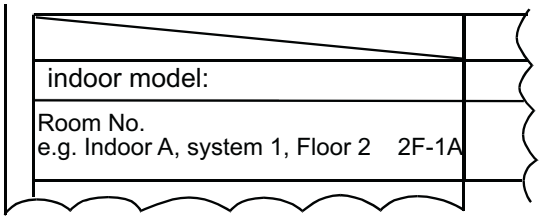
- The heating mode adopts the heat pump type that absorbs outdoor heat energy and releases into indoor. So if outdoor temperature goes down, the heating capacity will decrease.

Trial operation

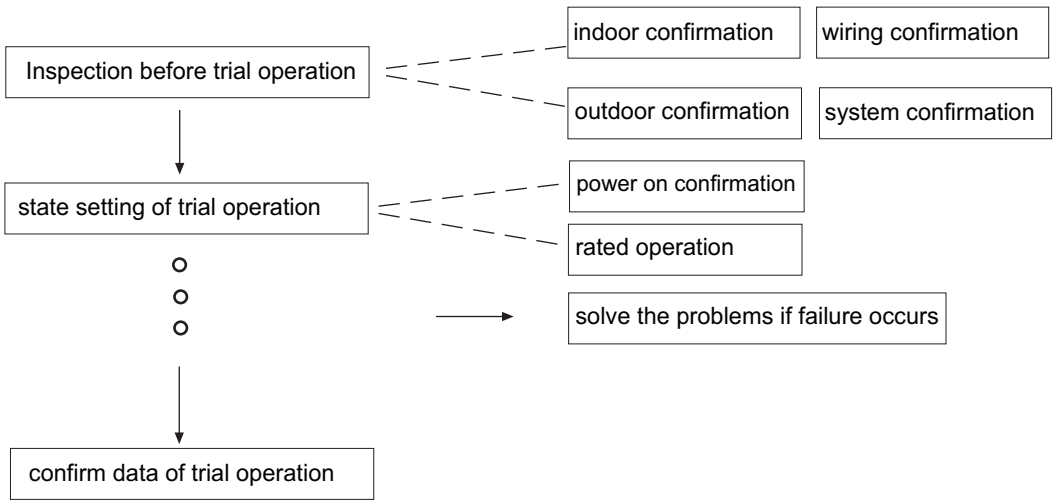
- Before trial operation:
  Before being energized, measure the resistor between power terminal block (live wire and neutral wire) and the grounded point with a multimeter, and check if it is over 1M * . If not, the unit can not operate.
  To protect compressor, energize the outdoor unit for at least 12 hours before the unit runs.If the crankcase heater is not energized for 6 hours, the compressor will not work.
  Confirm the compressor bottom getting hot.
  Except for the condition that there is only one master unit connected (no slave unit), under the other conditions, open fully the outdoor operating valves (gas side, liquid side, oil equalization pipe). If operating the unit without opening the valves, compressor failure will occur.
  Confirm all indoor units being electrified. If not, water leakage will occur.
  Measure the system pressure with pressure gauge, at the same time, operate the unit.
- Trial operation
  In trial operation, refer to the information of performance section.
  When the unit can not start up at the room temperature, make trial operation for outdoor.

1. System marks

On the condition that multi MRV II systems are installed, in order to confirm the relationship between outdoor and indoor, please make marks on outdoor electric control box cover to indicate the connected indoor unit. As the below figure:



2. Trial operation sequence



3. Inspection before trial operation

Before inspection, confirm the state of indoor and outdoor to avoid the trial failure because of the incorrect installation.

3.1 Indoor unit confirmation

No.	inspection items	results
1	If indoor unit is in good condition, and if the electric box position is in accordance with the state when out of factory, also if it is fixed firmly.	
2	If indoor wiring is correct. If the connecting terminal of the fan motor, swing motor and water pump is connected well. If the sensor is in good condition and it is at the proper place.	
3	If the dip switch of indoor unit is set correctly. If the indoor address, central controller address, wired controller address and its other selection are correct.	
4	If the wire sequence of wired controller is correct.	
5	Before being electrified, measure the resistors among live wire, neutral wire and earthing point on the terminal block with the 500V ohmmeter. The resistor must be over 1 M Ohm.	

3.2 Outdoor unit confirmation

No.	inspection items	results
1	If outdoor unit is in good condition, and if the electric box is fixed firmly.	
2	If outdoor wiring is correct. If the wires are broken.	
3	If the dip switch of outdoor unit is set correctly. If the outdoor address is correct. The master unit No. must be No.1, and the other units can be No. 2, No.3. If there are multiple outdoors, before being electrified, the master unit SW4-5 is set as "searching outdoor".	

3.3 Wiring confirmation

No.	inspection items	results
1	If outdoor power cable is fixed at correct position. And if the power cable is in compliance with the requirement.	
2	If indoor power cable is fixed at correct position. And if the power cable is in compliance with the requirement.	
3	Check the indoor power wiring to prevent that one of indoors has already powered down, all the other indoors and outdoors in one system are normally running. Indoors in one system should adopt one power supply.	
4	If the communication wire between outdoors complies with requirement, and A, B, C must be corresponding, or the PCB will be damaged.	
5	If the communication wire between indoor and outdoor complies with requirement, and the communication wires do not care the phase sequence, but the shielded wire is needed. The shielded layer among indoors must be continuous. The communication wire of the whole system must be earthed at the farthest shielded wires of indoor and outdoor.	
6	If the communication wire between indoor and wired controller complies with requirement, and A, B, C must be corresponding, or the wired controller will be abnormal.	
7	The distance between high voltage and low voltage of the power cable and the communication wire must be over 50mm. Or communciation failure will occur.	

3.4 System confirmation

liquid pipe diameter	standard additional charging amount(kg/m)	total length of liquid pipe (mm)	every liquid pipe additional charging amount(kg)
φ6.35	0.022	=	
φ9.52	0.054	=	
φ12.7	0.11	=	
φ15.88	0.17	=	
φ19.05	0.25	=	
φ22.22	0.35	=	
		total additional charging amount	

Note: Check if outdoor stop valve has been open fully. When there is only master unit, please confirm if the oil pipe stop valve has been close fully.

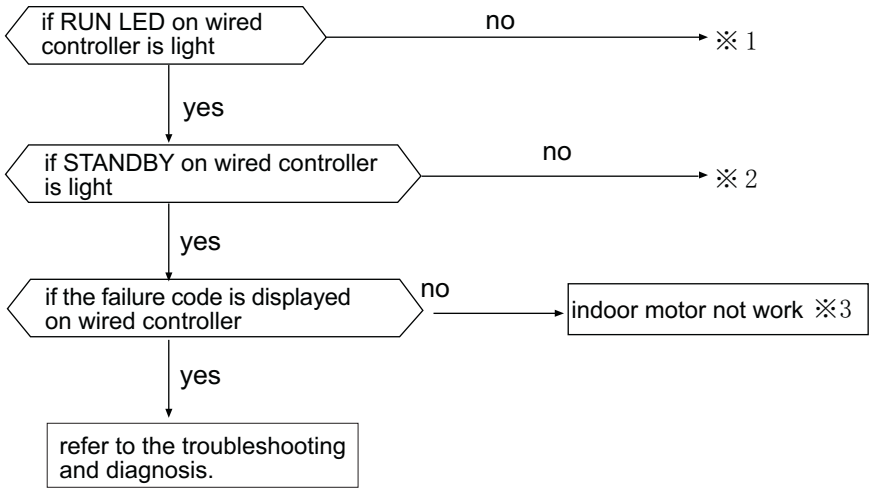
4.State setting of trial operation

Confirm being electrified
Indoor and outdoor are electrified respectively and then check as the following table:

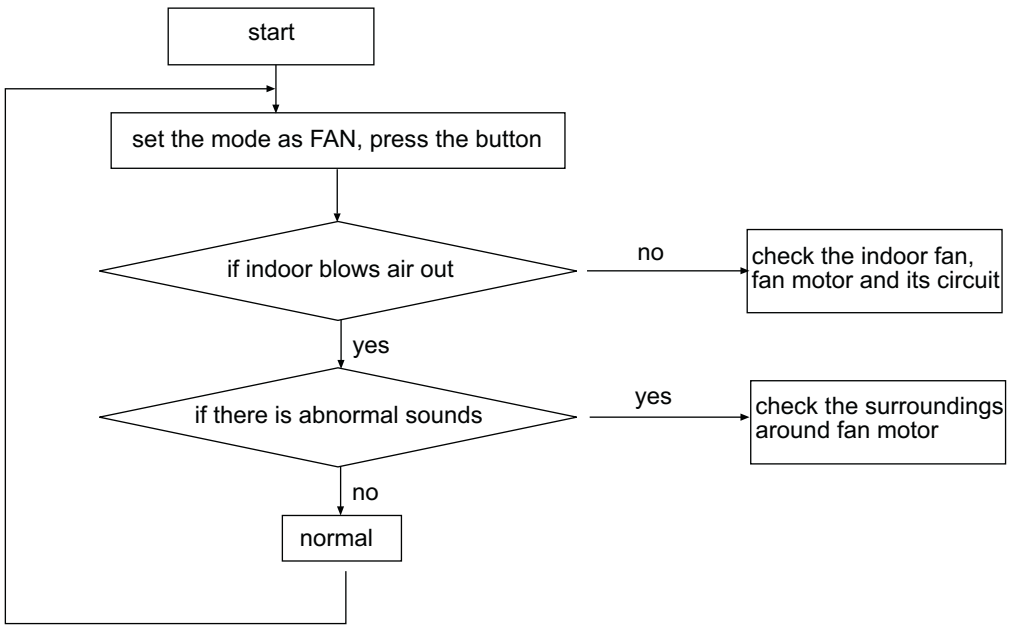
No.	inspection items	results
1	If outdoor PCB is electrified; if the communication indicator flashes.	
2	If indoor communication indicator flashes.	
3	Check the indoor running parameters are correct after outdoor is connected the testing board and the testing software, such as the sensor characteristic, the EEV open angle, etc.	

5.Trial operation

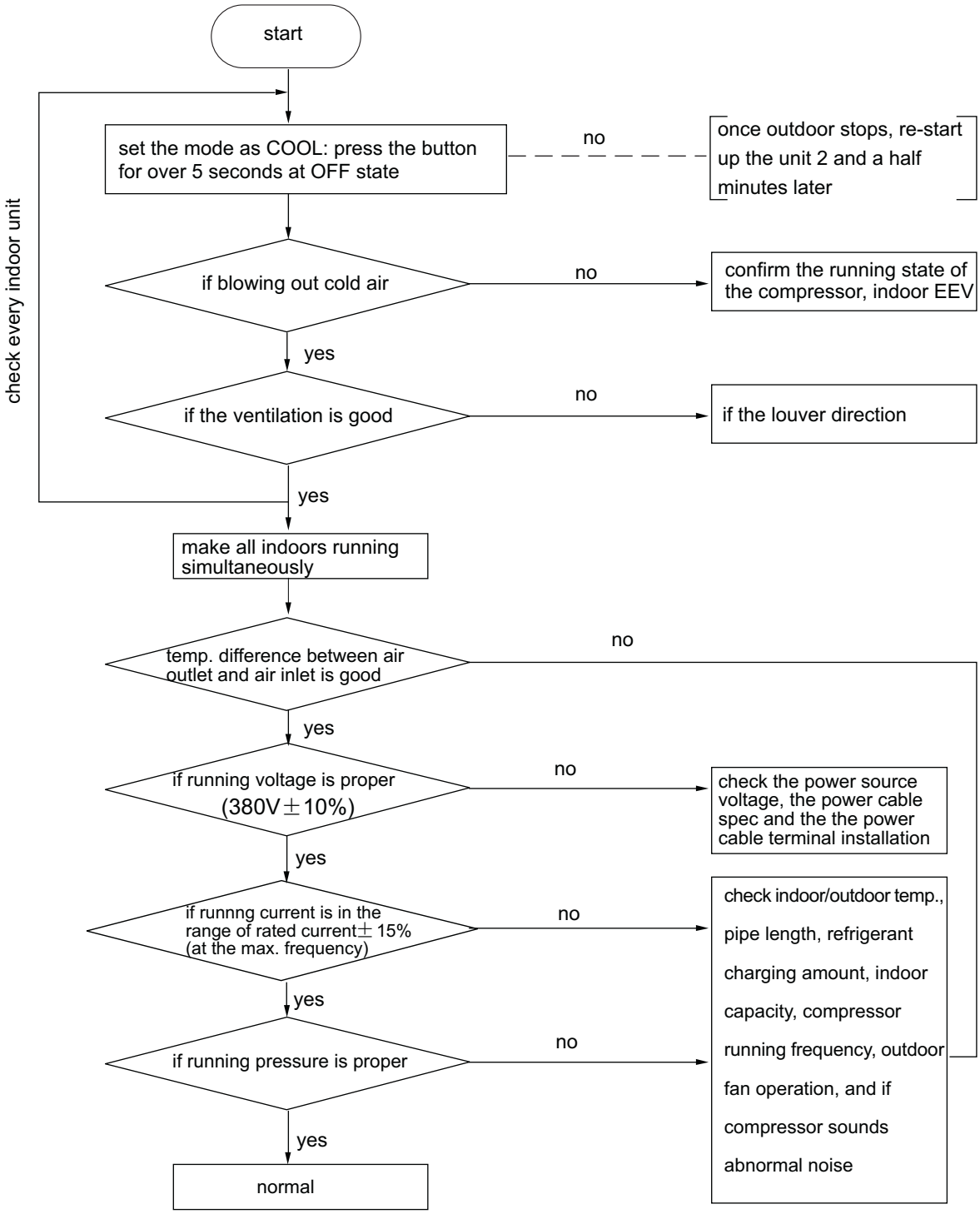
Generally, confirm all the indoors one by one. Please set the other indoors at STOP state.
(1)Main power supply and preliminary confirmation



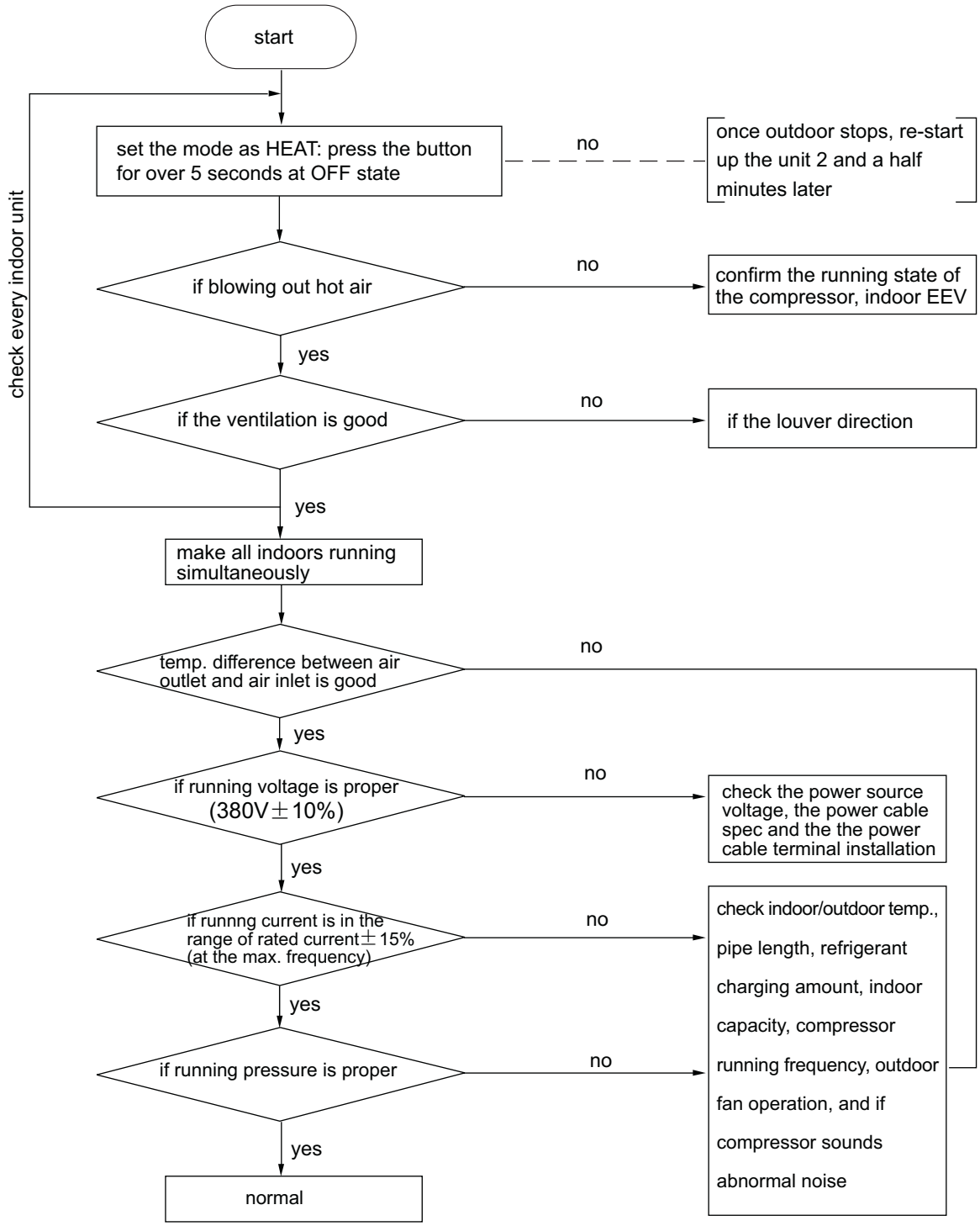
(2) Motor operation confirmation

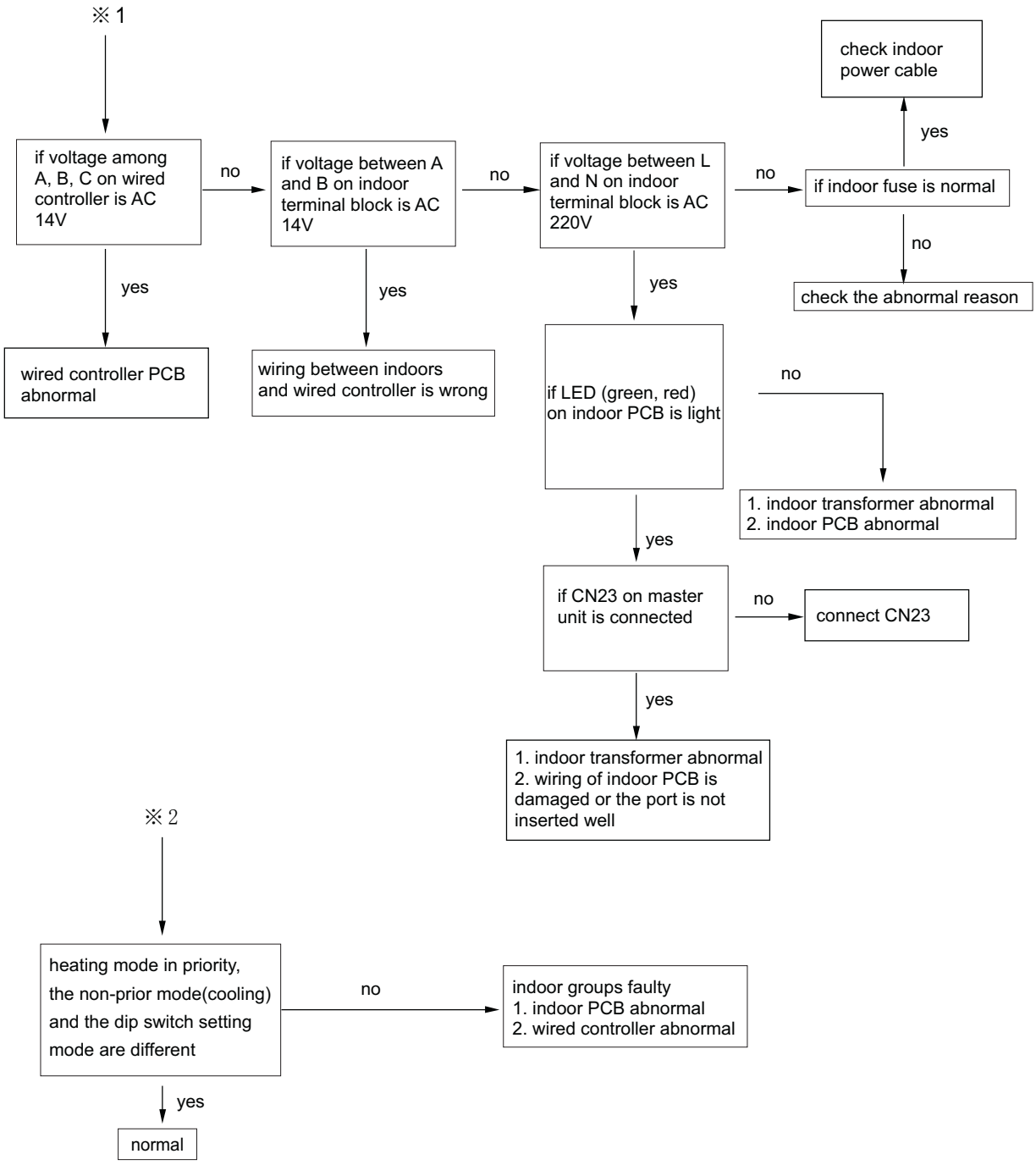


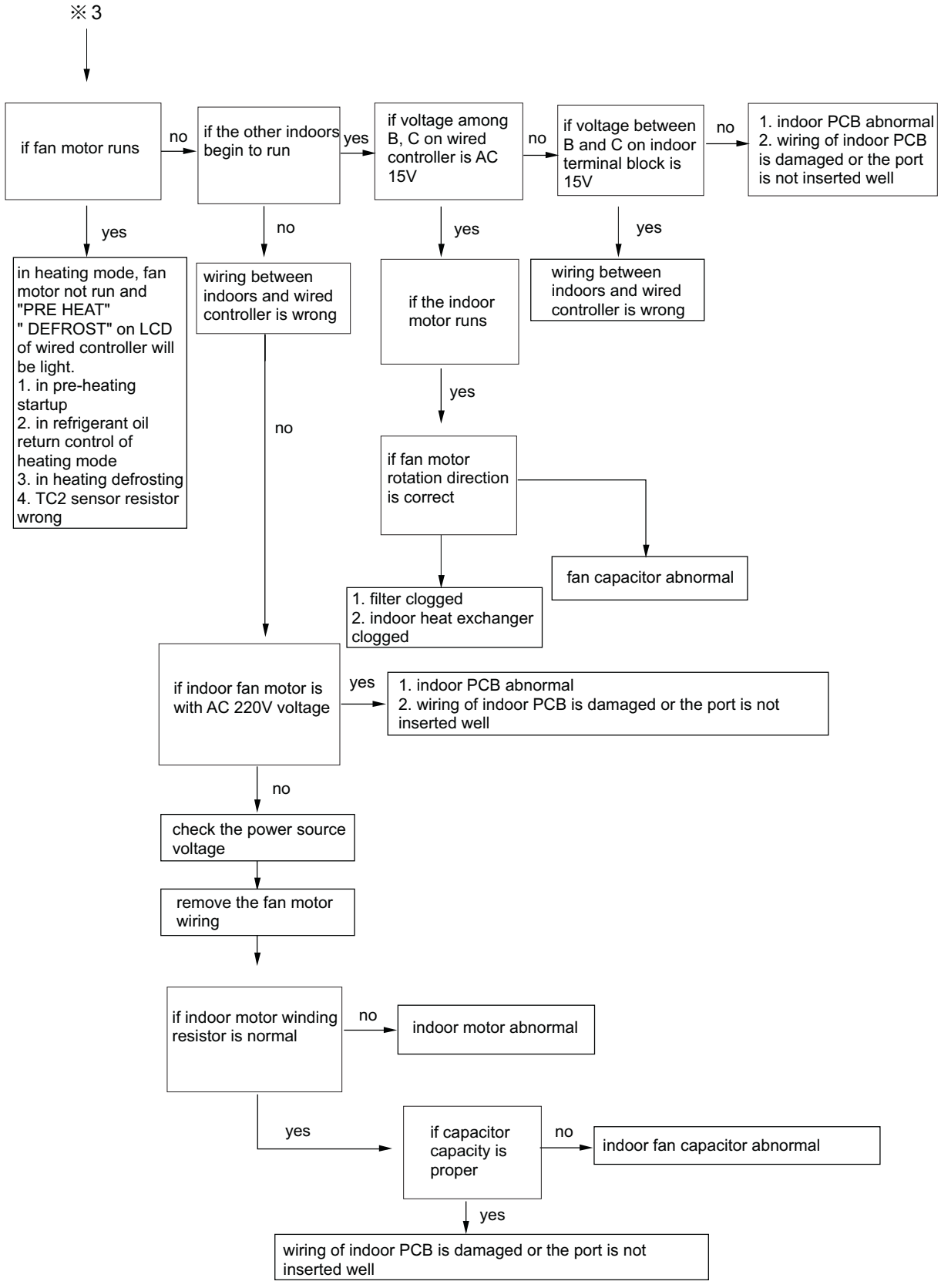
(3) Cooling operation confirmation


start
set the mode as COOL: press the button for over 5 seconds at OFF state
no
once outdoor stops, re-start up the unit 2 and a half minutes later
check every indoor unit
if blowing out cold air
no
confirm the running state of the compressor, indoor EEV
yes
if the ventilation is good
no
if the louver direction
yes
make all indoors running simultaneously
temp. difference between air outlet and air inlet is good
no
yes
if running voltage is proper (380V±10%)
no
check the power source voltage, the power cable spec and the the power cable terminal installation
yes
if runnng current is in the range of rated current± 15% (at the max. frequency)
no
check indoor/outdoor temp., pipe length, refrigerant charging amount, indoor capacity, compressor running frequency, outdoor fan operation, and if compressor sounds abnormal noise
yes
if running pressure is proper
no
yes
normal

(4) Heating operation confirmation


start
set the mode as HEAT: press the button for over 5 seconds at OFF state
no
once outdoor stops, re-start up the unit 2 and a half minutes later
check every indoor unit
if blowing out hot air
no
confirm the running state of the compressor, indoor EEV
yes
if the ventilation is good
no
if the louver direction
yes
make all indoors running simultaneously
temp. difference between air outlet and air inlet is good
no
yes
if running voltage is proper (380V±10%)
no
check the power source voltage, the power cable spec and the the power cable terminal installation
yes
if runnng current is in the range of rated current±15% (at the max. frequency)
no
check indoor/outdoor temp., pipe length, refrigerant charging amount, indoor capacity, compressor running frequency, outdoor fan operation, and if compressor sounds abnormal noise
yes
if running pressure is proper
no
yes
normal


※1
if voltage among A, B, C on wired controller is AC 14V
no
if voltage between A and B on indoor terminal block is AC 14V
no
if voltage between L and N on indoor terminal block is AC 220V
no
if indoor fuse is normal
yes
check indoor power cable
no
check the abnormal reason
yes
wired controller PCB abnormal
yes
wiring between indoors and wired controller is wrong
yes
if LED (green, red) on indoor PCB is light
no
1. indoor transformer abnormal
2. indoor PCB abnormal
yes
if CN23 on master unit is connected
no
connect CN23
yes
1. indoor transformer abnormal
2. wiring of indoor PCB is damaged or the port is not inserted well
※2
heating mode in priority, the non-prior mode(cooling) and the dip switch setting mode are different
no
indoor groups faulty
1. indoor PCB abnormal
2. wired controller abnormal
yes
normal


※3
if fan motor runs
no
if the other indoors begin to run
yes
if voltage among B, C on wired controller is AC 15V
no
if voltage between B and C on indoor terminal block is 15V
no
1. indoor PCB abnormal
2. wiring of indoor PCB is damaged or the port is not inserted well
yes
in heating mode, fan motor not run and "PRE HEAT" " DEFROST" on LCD of wired controller will be light.
1. in pre-heating startup
2. in refrigerant oil return control of heating mode
3. in heating defrosting
4. TC2 sensor resistor wrong
no
wiring between indoors and wired controller is wrong
yes
if the indoor motor runs
yes
wiring between indoors and wired controller is wrong
yes
if fan motor rotation direction is correct
fan capacitor abnormal
1. filter clogged
2. indoor heat exchanger clogged
no
if indoor fan motor is with AC 220V voltage
yes
1. indoor PCB abnormal
2. wiring of indoor PCB is damaged or the port is not inserted well
no
check the power source voltage
remove the fan motor wiring
if indoor motor winding resistor is normal
no
indoor motor abnormal
yes
if capacitor capacity is proper
no
indoor fan capacitor abnormal
yes
wiring of indoor PCB is damaged or the port is not inserted well

Note 1: Temp. difference between air inlet and air outlet Standard

A. In cooling mode, after running for at least 30 minutes, it is normal that the temp. difference between air inlet and air outlet is over 10℃, (at max. frequency)

B. In heating mode, after running for at least 30 minutes, it is normal that the temp. difference between air inlet and air outlet is over 14℃, (at max. frequency).

Note 2: Running current standard

It is normal that the running current is in the range of rated current ±15%(at max. frequency) . The current will be different for the below condition:

if more than the rated current: high indoor/outdoor temp. ; outdoor bad ventilation (cooling mode), indoor bad ventilation (heating mode).

if lower than rated current: low indoor/outdoor temp.; refrigerant leakage (lack of refrigerant).

Note 3: Running pressure standard

cooling (at max. frequency)	high pressure 2.0~3.5MPa	indoor 18~32℃ outdoor 25~35℃
	low pressure 0.6~1.0MPa	
heating (at max. frequency)	high pressure 2.2~2.8MPa	indoor 15~25℃ outdoor 5~10℃
	low pressure 0.3~0.8MPa	

The above value is measured after running for 15 minutes (ambient temp. is DB℃)

High/low pressure changing trend due to the running condition:

Cooling/heating:

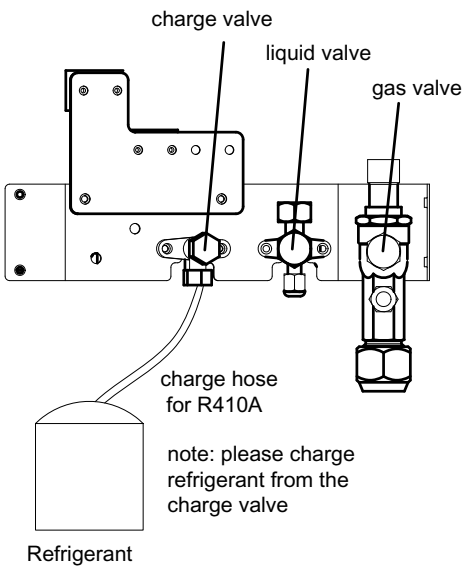
indoor temp. goes up---high/low pressure goes up

indoor temp. goes down---high/low pressure goes down

outdoor temp. goes up---high/low pressure goes up

outdoor temp. goes down---high/low pressure goes down

6. Refrigerant automatic recall operating instructions



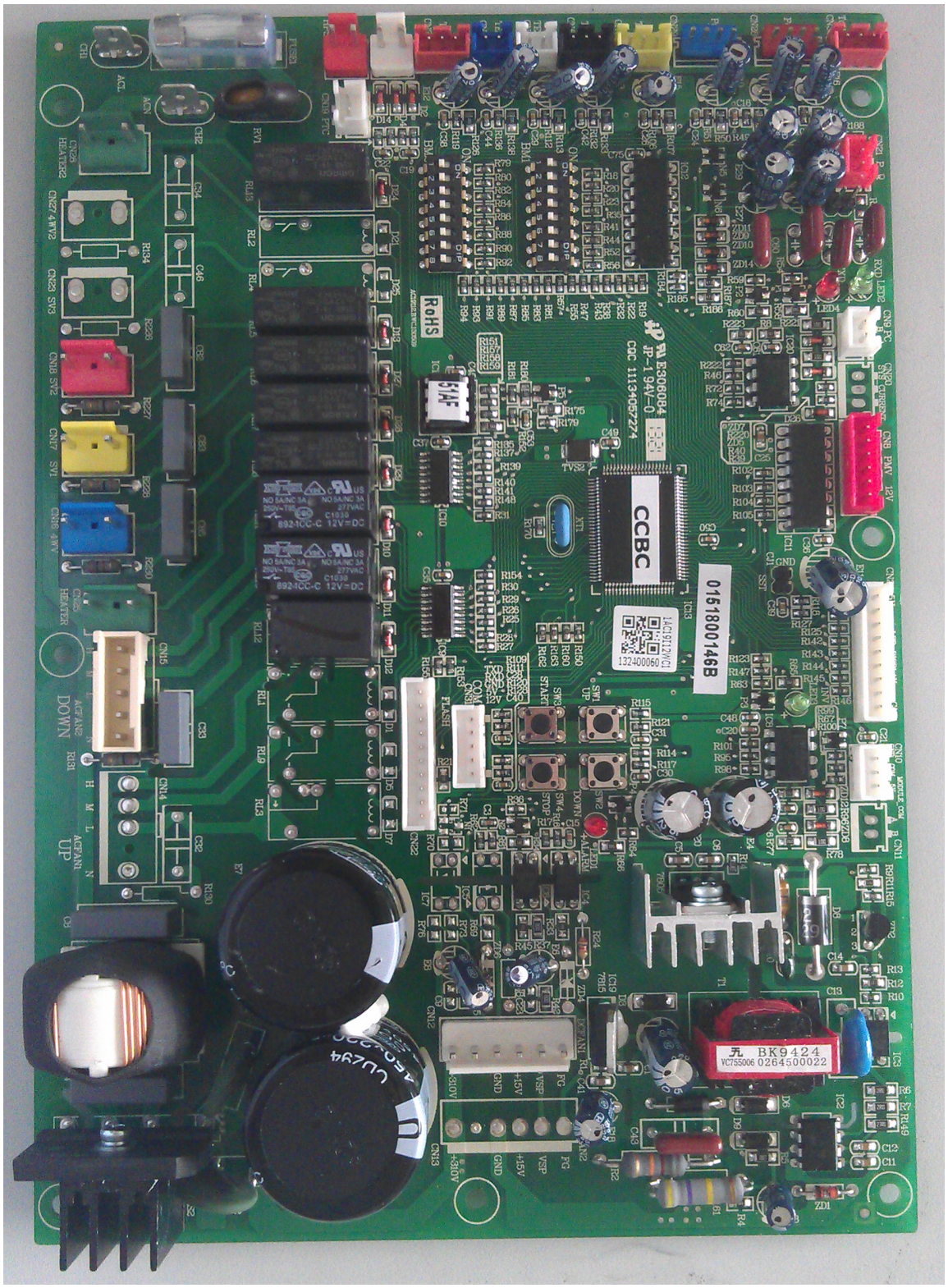
Please according to as follows the operation

1、Press“start+stop” at the same time on the PCB 5 ses;

2、When the digital tube shows C1 alternately gleam with low-pressure pressure, please close liquid valve; When the digital tube shows C2, please close gas valve; The system automatically shuts down after the 5 ses, the digital tube shows C3, Please cut the power.

12. Dip switch setting

Outdoor PCB photo



Selection switch and the display

In the following table, 1 is ON, 0 is OFF.
Dip switch definition:
BM1 is usually set by the personnel on site; BM2 is usually used in the factory.

① BM1 introduction

BM1_1	Indoor searching after startup	0	Begin to search indoor	
		1	Stop searching indoor and lock the quantity	
BM1_2	Start up after pre-heating for 2 hour	0	Allow	
		1	Forbidden	
BM1_4 BM1_5	Piping length selection	[4]	[5]	Selection item
		0	0	Medium piping length: 100m < L ≤200m
		0	1	Long piping length: L > 200m
		1	0	Short piping length: L ≤ 100m
		1	1	Medium piping length: 100m < L ≤200m
BM1_6 BM1_7	Defrosting condition "α" selection	[6]	[7]	Selection item
		0	0	8
		0	1	10
		1	0	6
		1	1	8
BM1_8	Silent operation selection	[8]	Silent mode	
		0	Forbidden (without silent operation)	
		1	Allow (with silent operation)	

Note:
The number of indoor units must be locked by the BM1_1(OFF to ON) before running the outdoor.

② BM2 introduction

BM2_2 BM2_3	Outdoor horse power selection	[2]	[3]	Outdoor horse power
		0	0	AV08
		1	0	AV10
		1	1	AV12

Note:
BM2_1, BM2_4, BM2_5, BM2_6, BM2_7, BM2_8, default is "0" .

13. Digital tube display

Main functionin struction:
By setting the rotary switch, the digital tube will display the outdoor and indoor unit parameters, the data is inform of decimal integer. During the process of installation, adjustion and maintenance, the whole system's operating parameters can be tested conveniently which can help to check and solve problems quickly and correctly.

SW01	SW02	Digital tube display
0	0	Display outdoor failure code
	1	Display operation mode
	4	Target frequency of inverter compressor
	5	Current frequency of inverter compressor
	6	Indoor quantity
	7	Running indoor quantity
1	0	Td discharging temperature
	1	Ta ambient temperature
	2	Ts suction temperature
	3	Te defrosting temperature 1
	4	Toil oil temperature
	5	Pd pressure
	6	Ps pressure
	7	Outdoor PMV valve open range
	A	Tfin temperature
	B	Compressor current
	C	Te defrosting temperature 2
4	0-F	Display indoor failure code
5	0-F	Indoor capacity
7	0-F	Indoor PMV valve open range
9	0-F	Indoor Ta ambient temperature
A	0-F	Indoor TC1 gas temperature
B	0-F	Indoor TC2 liquid temperature

14. Failure code

Digital tube indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
20	20-0	Defrosting temp.sensor TE1 failure	AD value is below 11(open circuit) or over 1012(short circuit) for 60seconds, in cooling mode, if the sensor is abnormal, the unit does not deal with it, besides, in defrosting and within 3 minutes after defrosting, no alarm	Resumable
20	20-1	Defrosting temp.sensor TE2 failure		
21	21	Ambient temp. sensor Ta failure	AD value is below 11(open circuit) or over 1012(short circuit) for 60seconds, in defrosting and within 3 minutes after defrosting, no alarm	Resumable
22	22	Suction temp. sensor Ts failure	AD value is below 11(open circuit) or over 1012(short circuit) for 60seconds, in defrosting and within 3 minutes after defrosting, no alarm	Resumable
23	23	Discharging temp.sensor Td failure	After compressor is running for 5 minutes, AD value is below 11(open circuit) or over 1012(short circuit) for 60seconds, in course of startup, defrosting and within 3 minutes after defrosting, no alarm	Resumable
24	24	Oil temp.sensor Toil failure	AD value is below 11(open circuit) or over 1012(short circuit) for 60seconds, if Ta<=-10degree or ET<=-10degree, within 5 minutes, no alarm	Resumable
26	26-0	Indoor communication failure	For continuous 200 cycles, can not find connected indoors	Resumable
26-1	26-1		For continuous 300seconds, the searched indoor quantity is less than the set quantity.	
26-2	26-2		For continuous 300seconds, the searched indoor quantity is more than the set quantity.	
27	27	Oil temp. too high protection(Toil)	Toil≥110degree at interval of 25msec for twice continuously, and over the set value, then stop and alarm; 3 minutes later, resume automatically. If it occurs 3 times in an hour, confirm the failure.	Once confirmation, un-resumable
28	28	High pressure sensor Pd failure	AD value is below 11(open circuit) or over 1012(short circuit) for 30seconds, in defrosting and within 3 minutes after defrosting, no alarm	Resumable

LD indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
29	1D	Low pressure sensor Ps failure	AD value is below 11(open circuit) or over 1012(short circuit) for 30seconds, in defrosting and within 3 minutes after defrosting, no alarm	Resumable
30	30	High pressure switch HPSi failure	If disconnect for 50ms continuously, alarm. If alarm 3 times in an hour, confirm the failure	Once confirmation, un-resumable
33	33	EEPROM failure	EEPROM failure	Once confirmation, un-resumable
34	34	Discharging temp.too high protection (Td)	Td≥115degree at interval of 25msec for twice continuously, and over the set value, then stop and alarm; 3 minutes later, resume automatically. If it occurs 3 times in an hour, confirm the failure.	Once confirmation, un-resumable
35	35	4-way valve reversing failure	After 4-way valve is electrified for 3 minutes, if the below conditions can be met for continous 10 seconds, that is conversing successfully: 1. this outdoor compressor is running normally 2. Pd-Ps≥0.6MPa, Otherwise, the system alarms reversing failure.	Once confirmation, un-resumable
36	36	Oil temp. too low protection (Toil)	In normal operation, if Td<CT+6 ℃ for continuous 5 minutes, the unit stops and alarms.2 minutes and 50 seconds later, resume automatically. If it occurs 3 times in an hour, confirm the failure	Once confirmation, un-resumable
39-0	39-0	Low pressure sensor Ps too low protection	After compressor is running (except for residual operation), if in cooling, Ps<0.05Mpa; in heating, Ps<0.03Mpa; in oil return, Ps<0.03Mpa for continuous 5 minutes, alarm and stop. 2 minutes and 50 seconds later, resume automatically, if it occurs 3 times in an hour, confirm the failure.	Once confirmation, un-resumable
39-1	39-1	Compression ratio too high protection	After compressor is running, compression ratio ε > 8. for continuous 5 minutes stop and alarm.2 minutes and 50 seconds later, resume automatically, if it occurs 3 times in an hour, confirm the failure.	Once confirmation, un-resumable

LD indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
39-2	39-2	Compression ratio too low protection	In normal operation, compression ratio ε <1.8 for continuous 5 minutes stop and alarm.2 minutes and 1 seconds later, resume automatically, if it occurs 3 times in an hour, confirm the failure.	Once confirmation, un-resumable
40	40	High pressure sensor Pd too high protection	In normal operation, Pd>=4.15Mpa for continuous 50ms, alarm and stop. 2 minutes and 50 seconds later, resume automatically, if it occurs 3 times in an hour, confirm the failure.	Once confirmation, un-resumable
43	43	Discharging temp. sensor Td too low protection	In normal operation, if Td<CT+10℃ for continuous 5 minutes, the unit stops and alarms.2 minutes and 50 seconds later, resume automatically. If it occurs 3 times in an hour, confirm the failure. After fixed frequency compressor alarms, inverter compressor will continue to run. If fixed frequency compressor has been locked for 3 times, the unit will stop and alarm.	Once confirmation, un-resumable
46	46	Communication with inverter board failure	No communication within 30 seconds continuously	Resumable
71	71	DC motor blocked	Running at speed below 20rpm for 30s, or at speed of 70% lower than the target for 2 minutes, 2 minutes and 50 seconds later after stop, resume automatically. It occurs 3 times in an hour, confirm the failure.	Once confirmation, un-resumable
75	75	No pressure drop between high pressure and low one	In 5 minutes after inverter compressor starts up, Pd-Ps<=0.2MPa. 2 minutes and 50 seconds later after unit stops, resume automatically, if it occurs twice continuously, confirm the failure.	Once confirmation, un-resumable
78	78	Lack of refrigerant	Compressor running in cooling mode, Ps<0.2MPa for 30 minutes; compressor running in heating mode, Tsi - ET>20; LEV will fully open for 60 minutes, the unit will output lack of refrigerant alarm, unit will not stop.	--

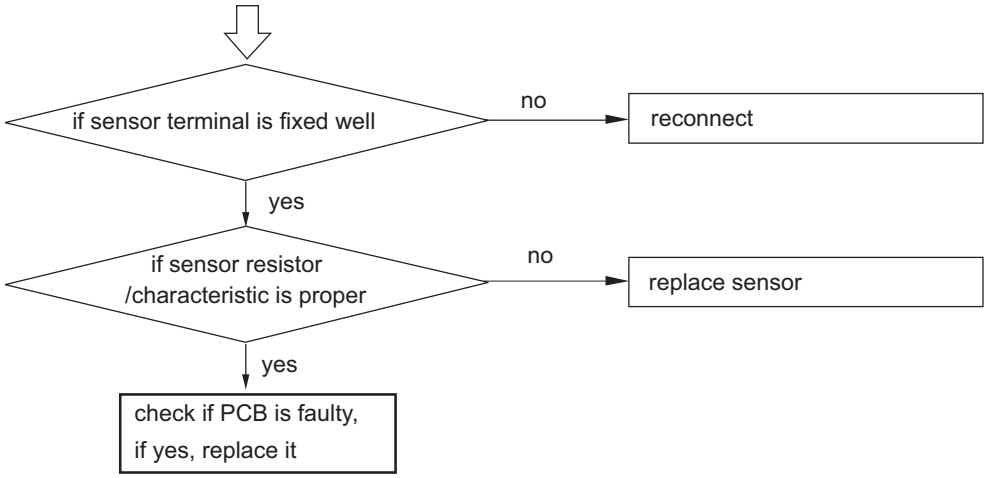
LD indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
110	110	IPM modular protection (F0)	IPM modular over current, in short circuit, over heat, voltage too low of control circuit.	3 times in an hour, confirm failure; once confirmation, un-resumable
111	111	Compressor out of control	In the course of compressor startup or running, the unit can not detect the rotor position, or not connecting compressor.	
112	112	Radiator of transducer temp.too high	Radiator temp. too high	
113	113	Transducer overload	Output current of transducer is too high	
114	114	Voltage too low of DC bus line of transducer	Voltage of power source is too low	
115	115	Voltage too high of DC bus line of transducer	Voltage of power source is too high	
116	116	Communication abnormal between transducer and control PCB	Communication is disconnected	Resumable
117	117	Transducer over current (software)	Compressor startup fails for 5 times continuously, or compressor is running down till stops caused by over current or over heat	3 times in an hour, confirm failure; once confirmation, un-resumable
118	118	Compressor startup failure	The sensor used for current detecting of transducer is abnormal, disconnected or incorrectly connection	
120	120	Power supply of transducer abnormal	Power supply of transducer is broken down instantly	
121	121	Power supply of inverter board is abnormal	Power supply of inverter board is broken down instantly	3 times in an hour, confirm failure; once confirmation, un-resumable
122	122	Radiator temp. sensor of transducer abnormal	Resistor of temp.sensor abnormal or temp.sensor disconnected	

When there is no failure, if the starting condition can not be met, digital tube on master unit will display stand-by code:

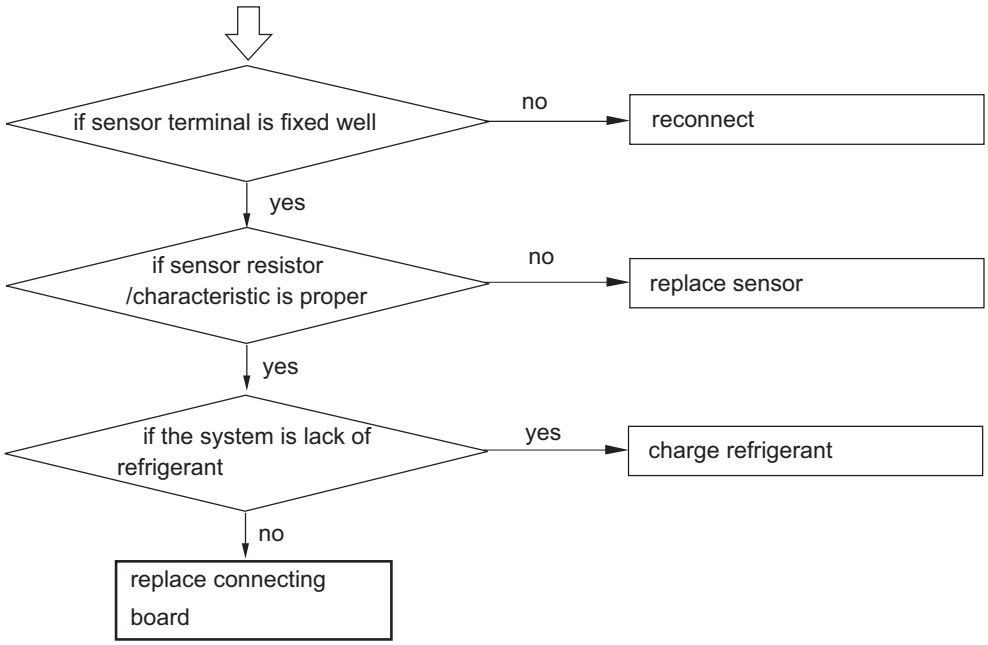
555	Standby state of capacity over-match	When capacity is over 130% or lower than 50%, the system is standby.	Resumable
555.1	Outdoor ambient temperature too high (heating)	Ta>27℃ , Standby	
555.3	Outdoor ambient temperature too high or too low (cooling)	Ta>54℃ or Ta<-10℃ , Standby	
555.4	Crankcase heater working	Oil temperature is too low	

15. Trouble shooting

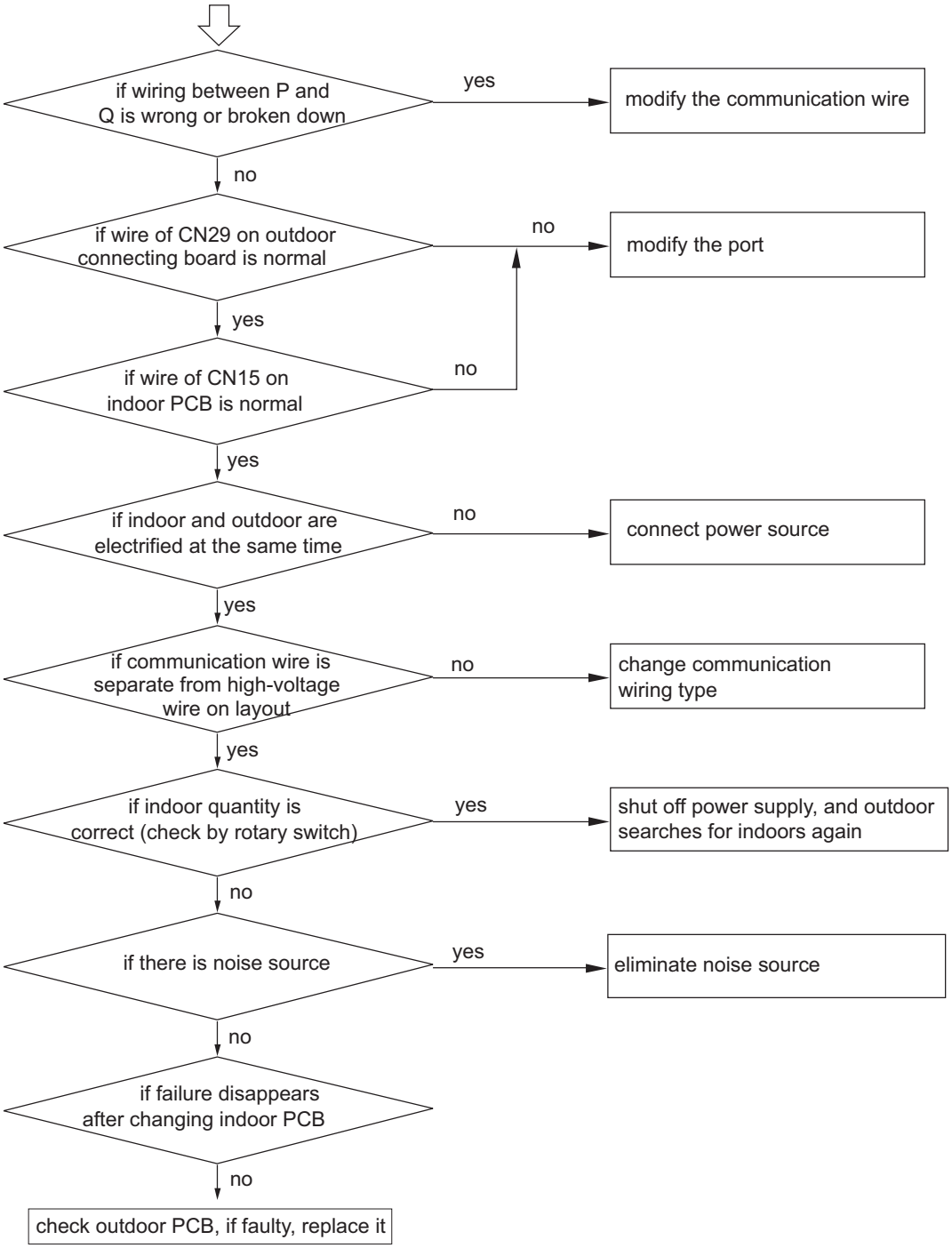
[20~24] temperature sensor failure



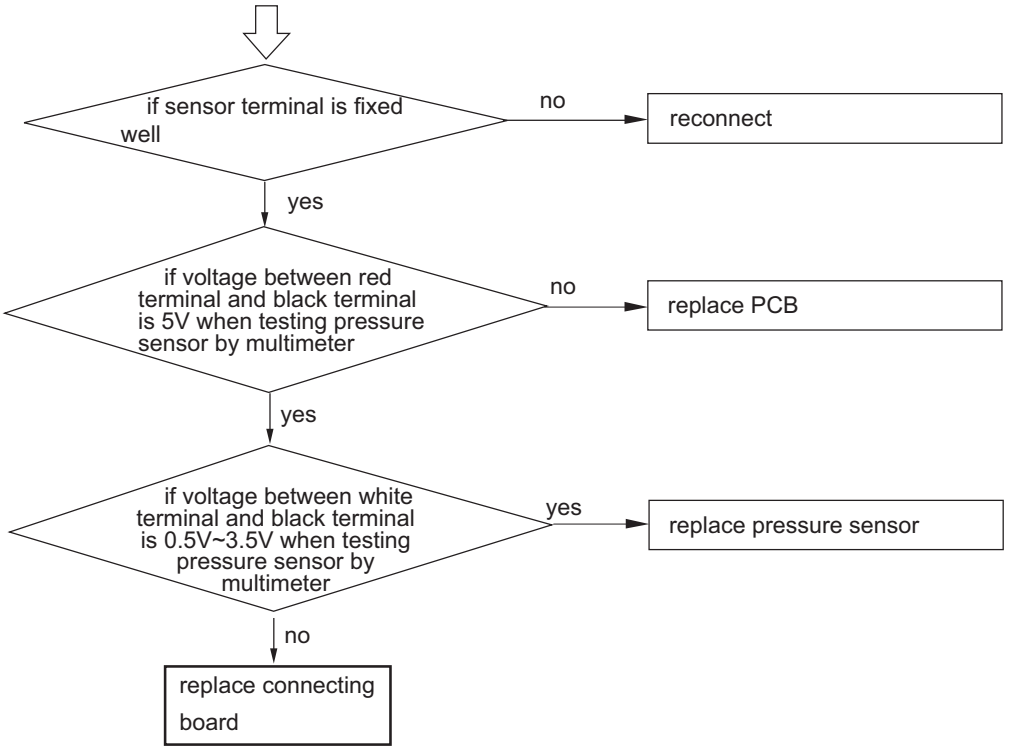
[27] protection of oil temperature too high



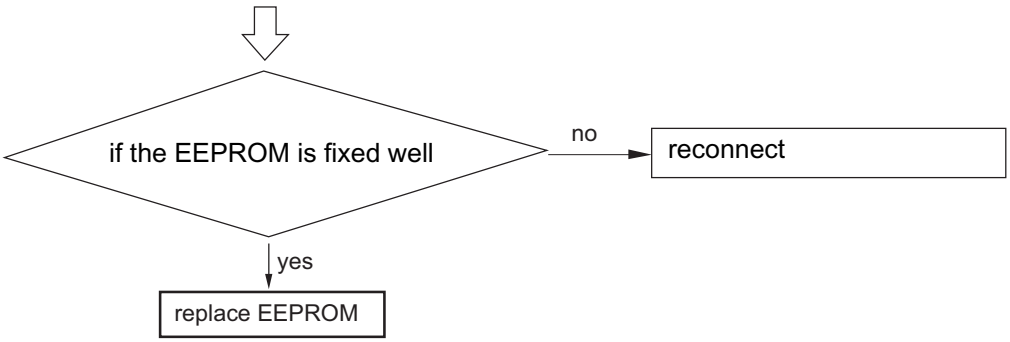
[26-0,26-1,26-2] communication circuit between indoor and outdoor


if wiring between P and Q is wrong or broken down
yes
modify the communication wire
no
if wire of CN29 on outdoor connecting board is normal
no
modify the port
yes
if wire of CN15 on indoor PCB is normal
no
yes
if indoor and outdoor are electrified at the same time
no
connect power source
yes
if communication wire is separate from high-voltage wire on layout
no
change communication wiring type
yes
if indoor quantity is correct (check by rotary switch)
yes
shut off power supply, and outdoor searches for indoors again
no
if there is noise source
yes
eliminate noise source
no
if failure disappears after changing indoor PCB
no
check outdoor PCB, if faulty, replace it

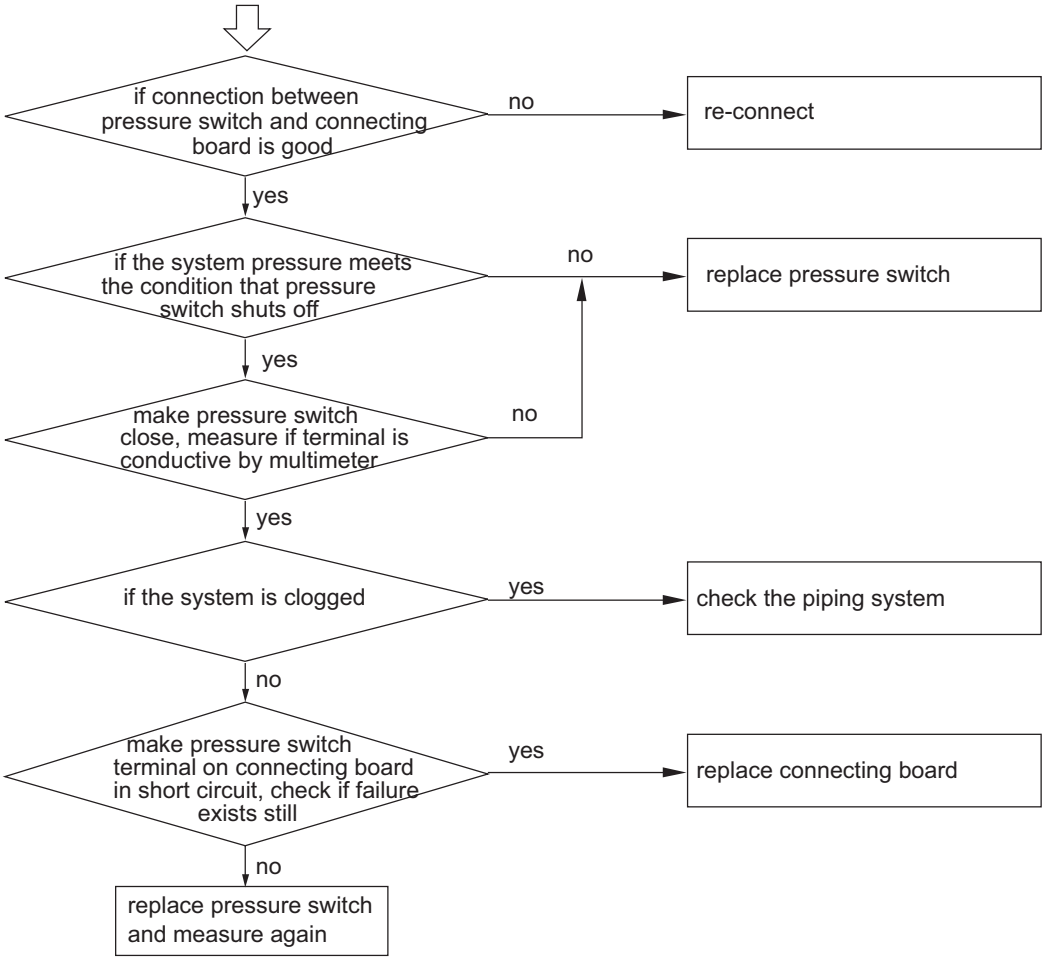
[28, 29] high/low pressure sensor failure


if sensor terminal is fixed well
no
reconnect
yes
if voltage between red terminal and black terminal is 5V when testing pressure sensor by multimeter
no
replace PCB
yes
if voltage between white terminal and black terminal is 0.5V~3.5V when testing pressure sensor by multimeter
yes
replace pressure sensor
no
replace connecting board

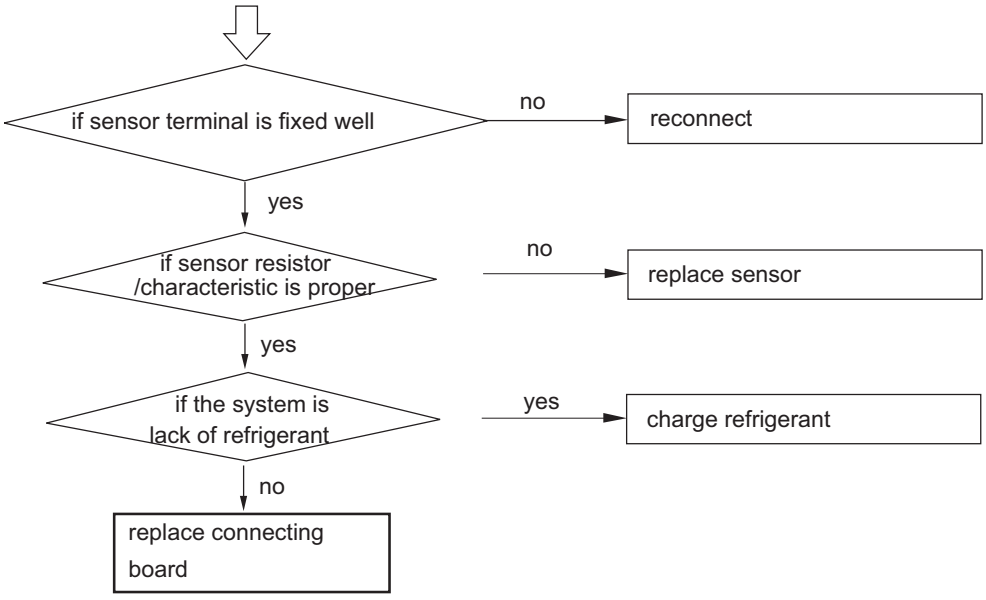
[33] outdoor EEPROM failure



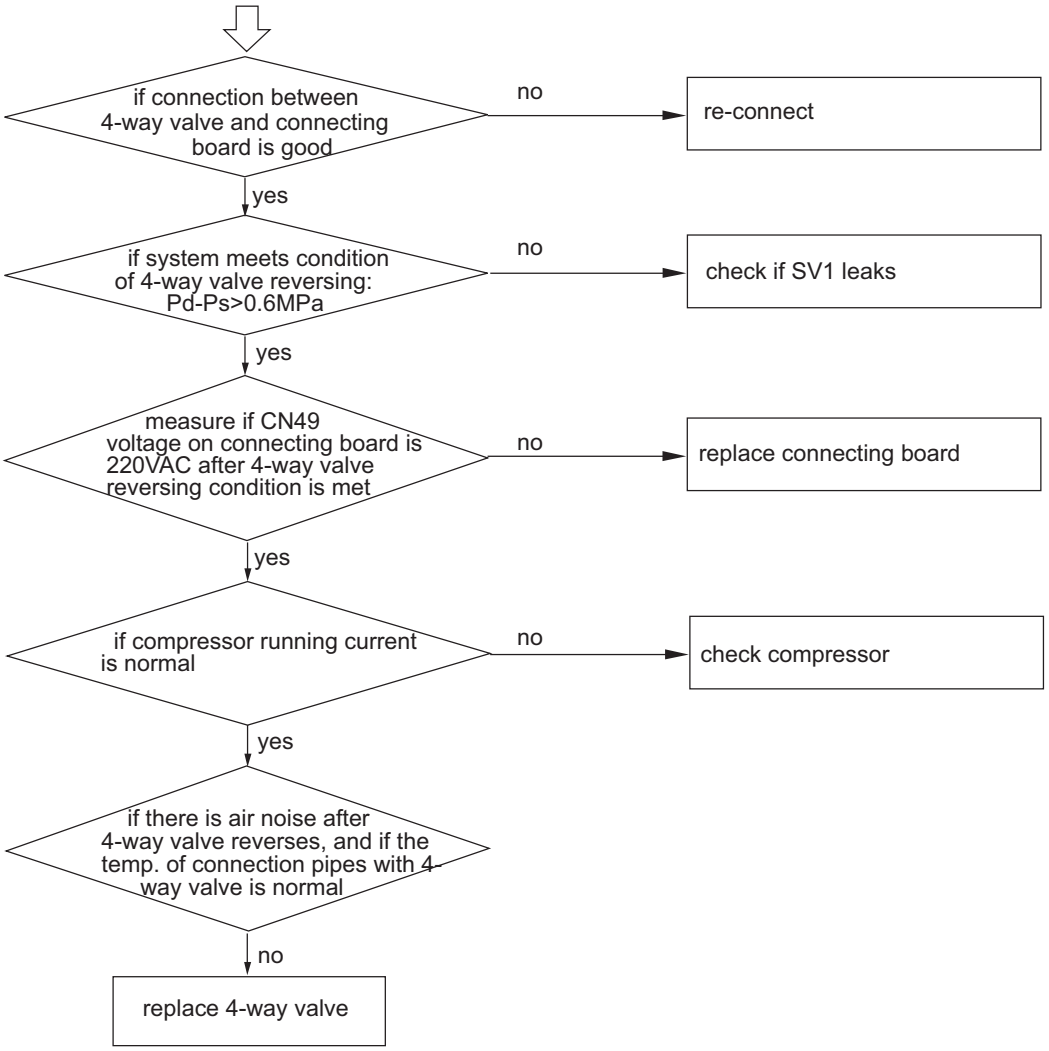
[30]high pressure switch shutoff failure


if connection between pressure switch and connecting board is good
no
re-connect
yes
if the system pressure meets the condition that pressure switch shuts off
no
replace pressure switch
yes
make pressure switch close, measure if terminal is conductive by multimeter
no
yes
if the system is clogged
yes
check the piping system
no
make pressure switch terminal on connecting board in short circuit, check if failure exists still
yes
replace connecting board
no
replace pressure switch and measure again

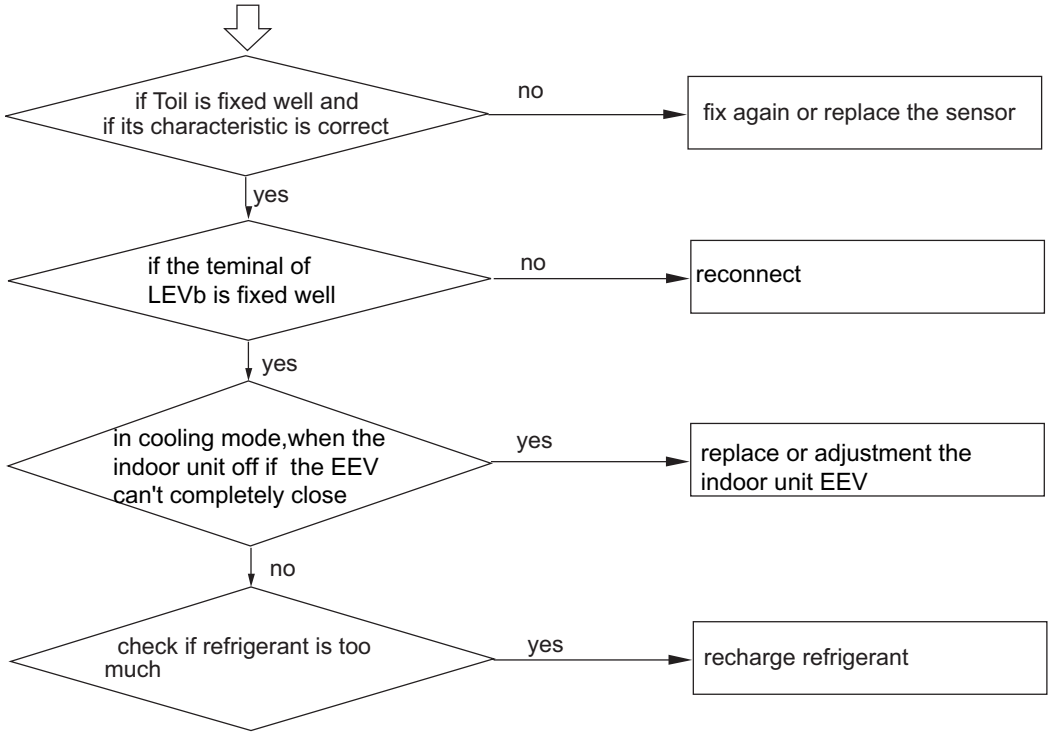
[34] protection of discharging temp. too high



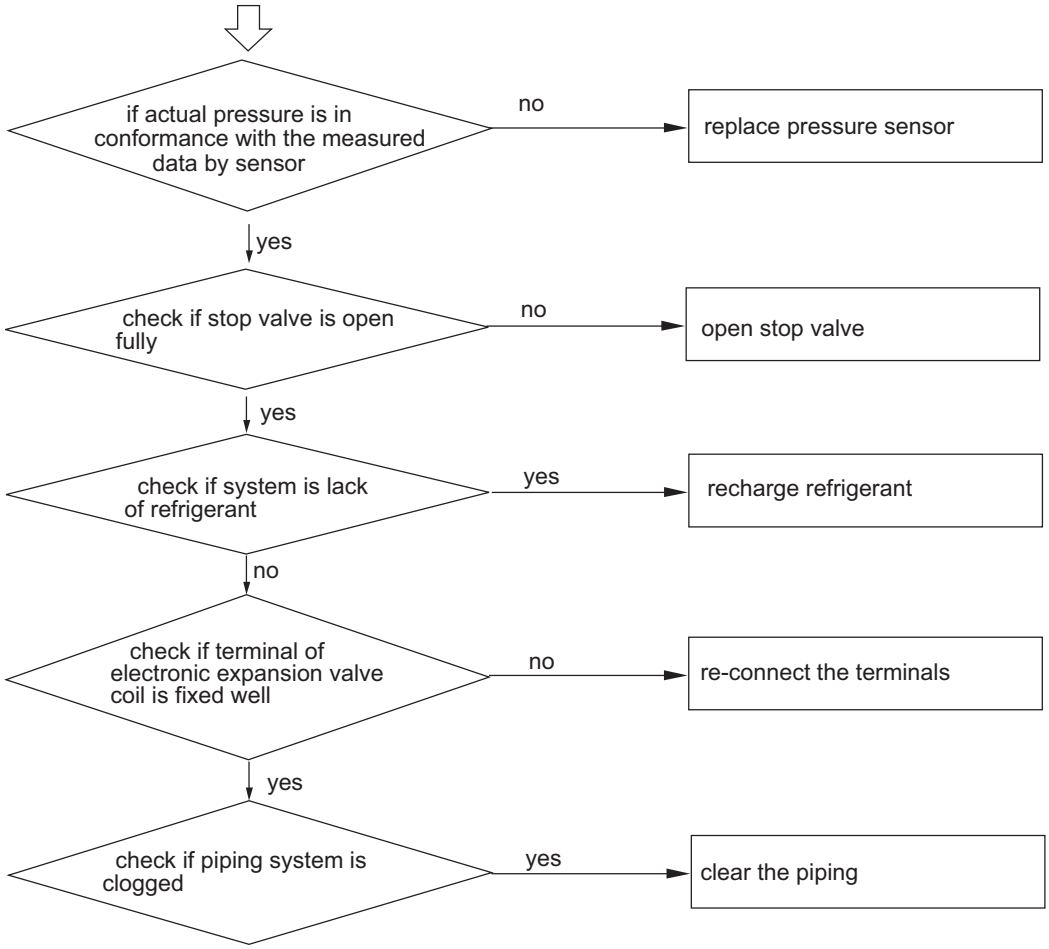
[35] 4-way valve reversing failure


if connection between 4-way valve and connecting board is good
no
re-connect
yes
if system meets condition of 4-way valve reversing: Pd-Ps>0.6MPa
no
check if SV1 leaks
yes
measure if CN49 voltage on connecting board is 220VAC after 4-way valve reversing condition is met
no
replace connecting board
yes
if compressor running current is normal
no
check compressor
yes
if there is air noise after 4-way valve reverses, and if the temp. of connection pipes with 4-way valve is normal
no
replace 4-way valve

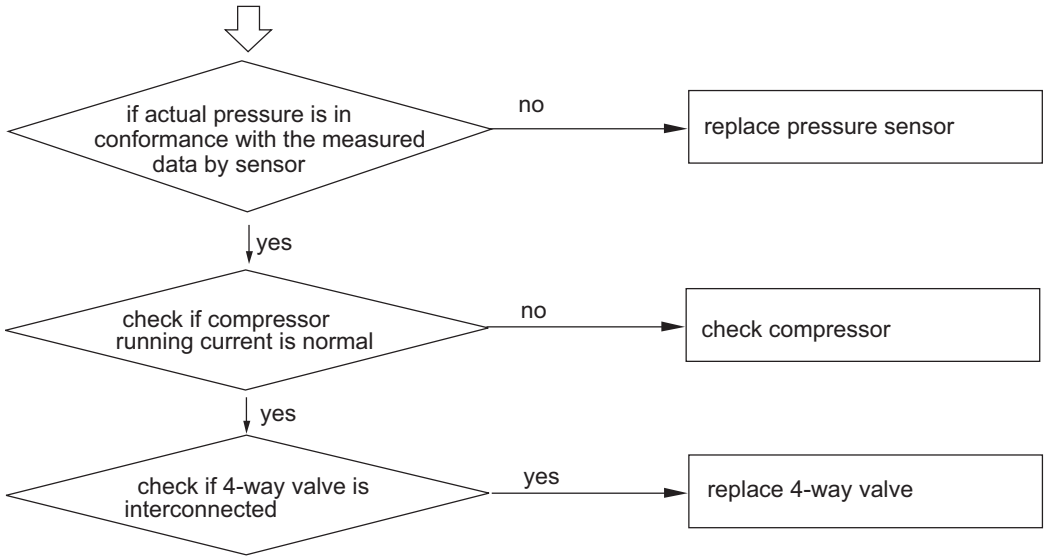
[36] protection of oil temperature too low



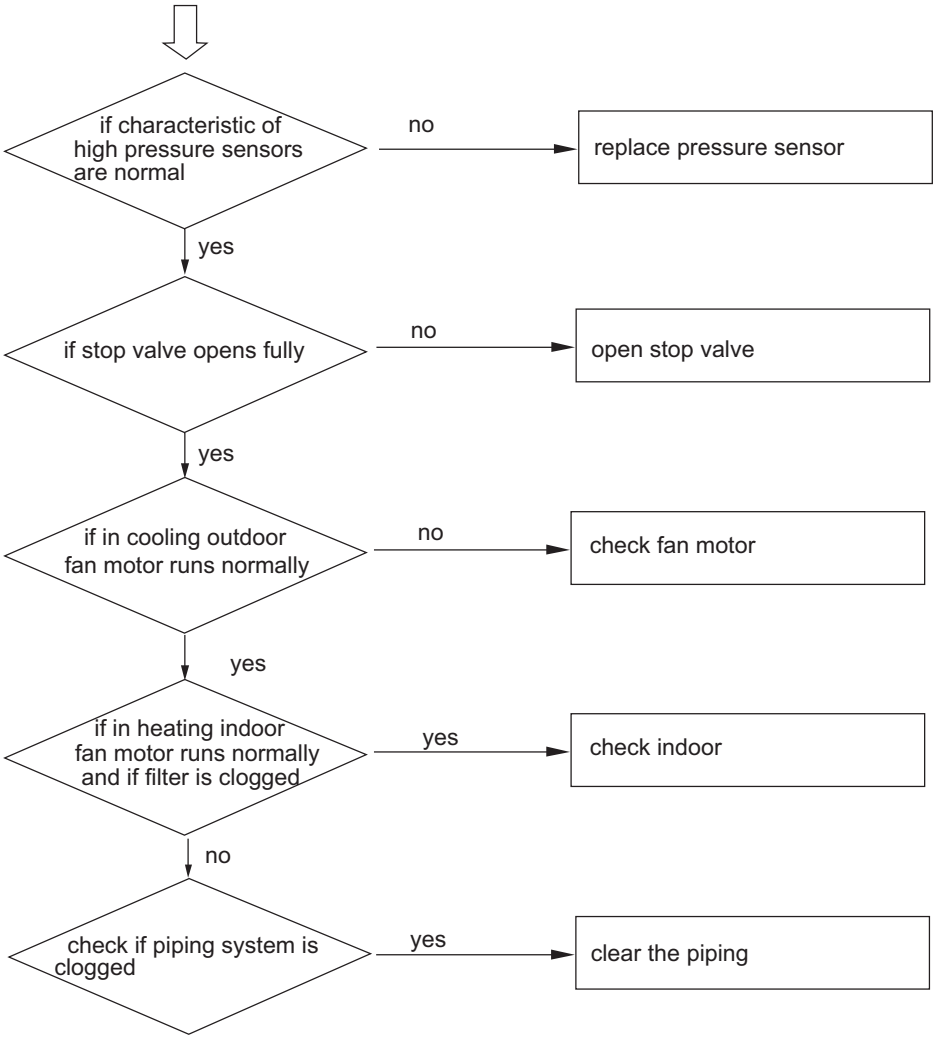
[39-0, 39-1] low pressure too low and compression ratio too high



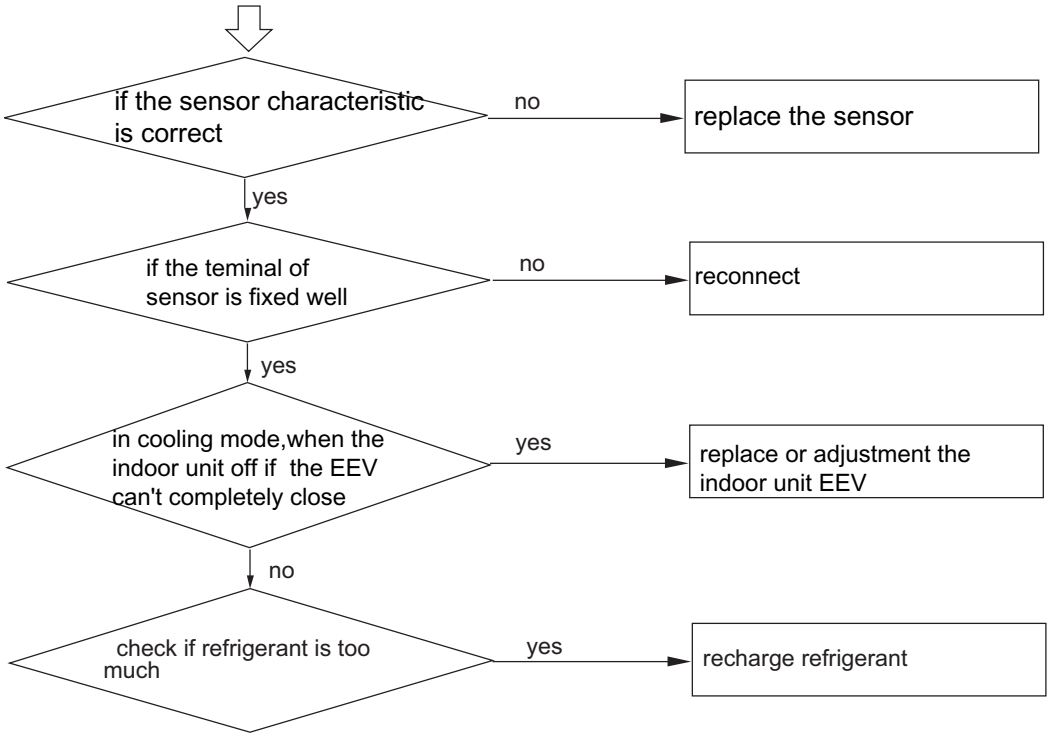
[39-2] compression ratio too low



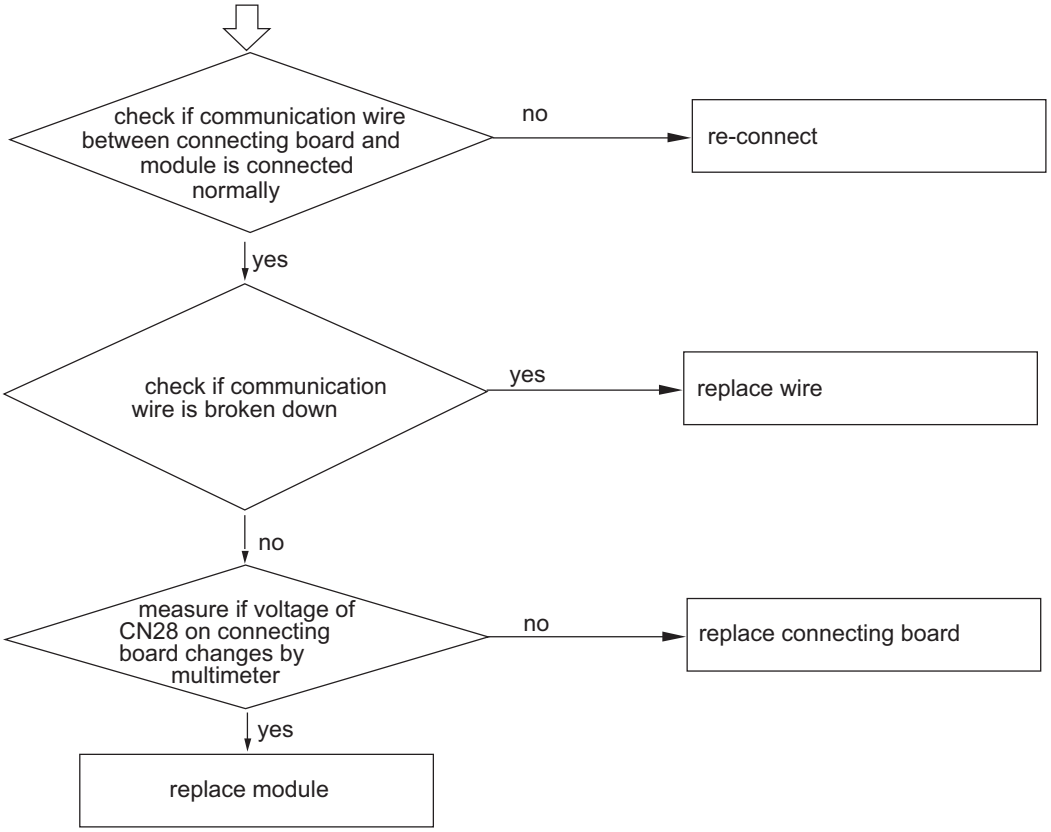
[40] high pressure protection



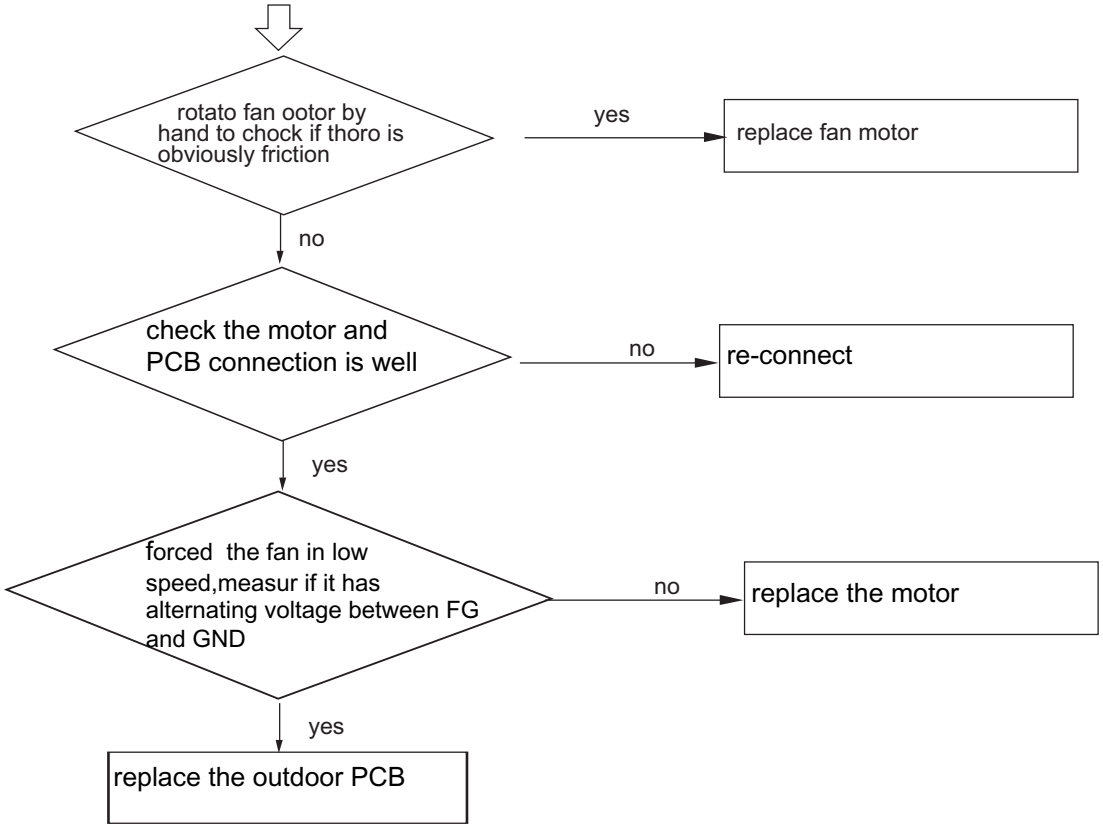
[43] discharging temp. sensor Td too low protection



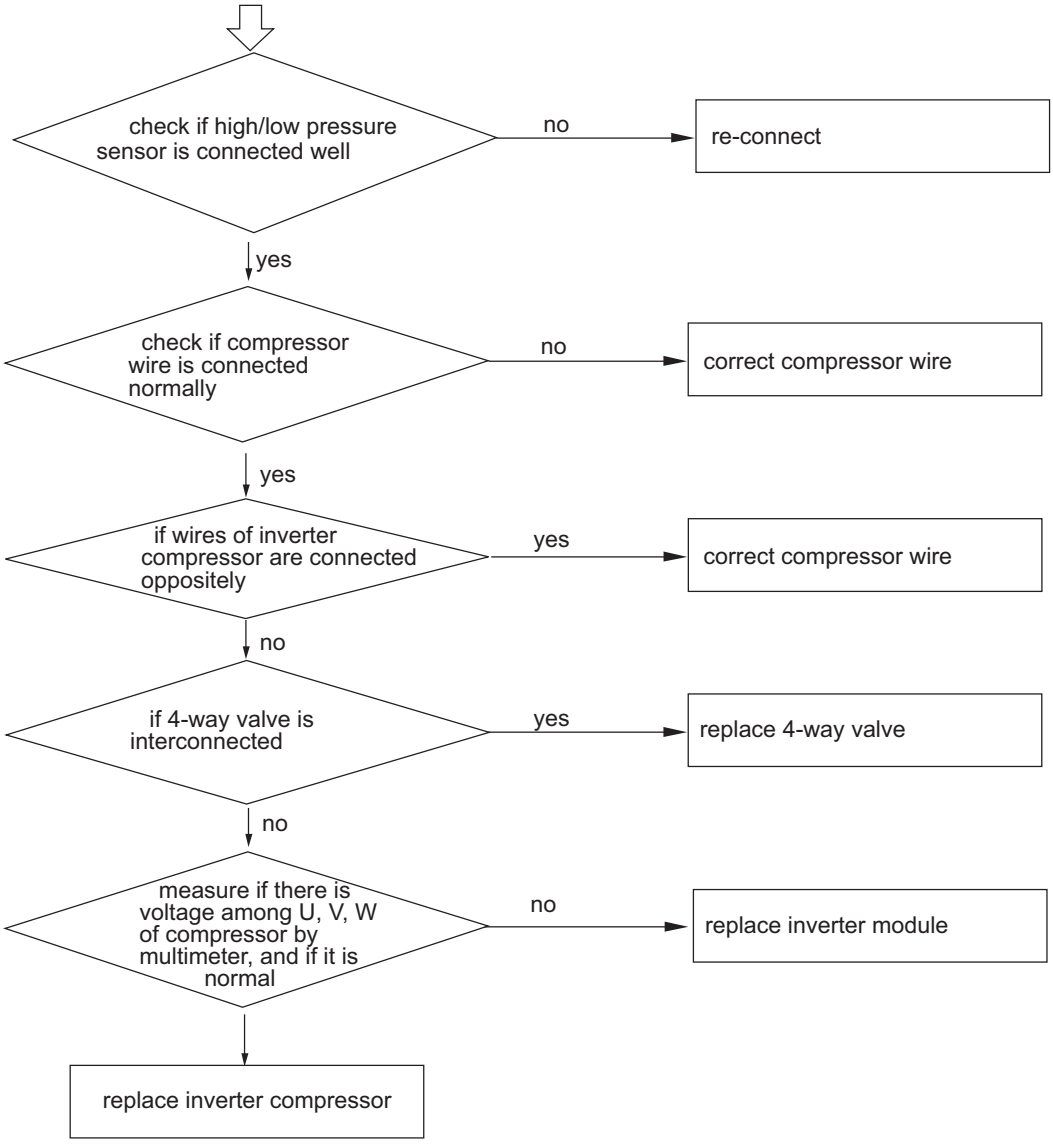
[46] communication with inverter module failure



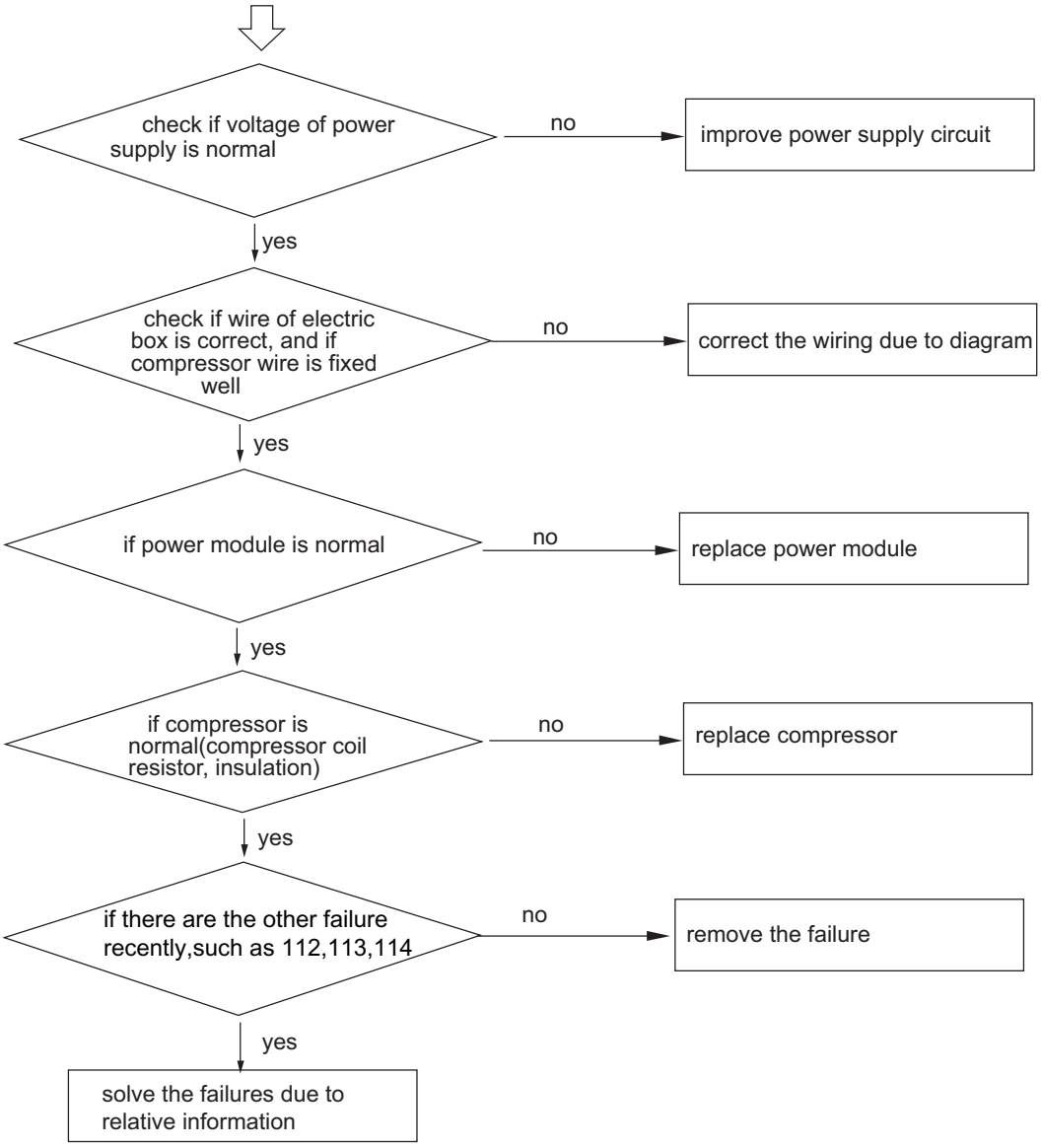
[71] DC motor blocked


rotato fan ootor by hand to chock if thoro is obviously friction
yes
replace fan motor
no
check the motor and PCB connection is well
no
re-connect
yes
forced the fan in low speed,measur if it has alternating voltage between FG and GND
no
replace the motor
yes
replace the outdoor PCB

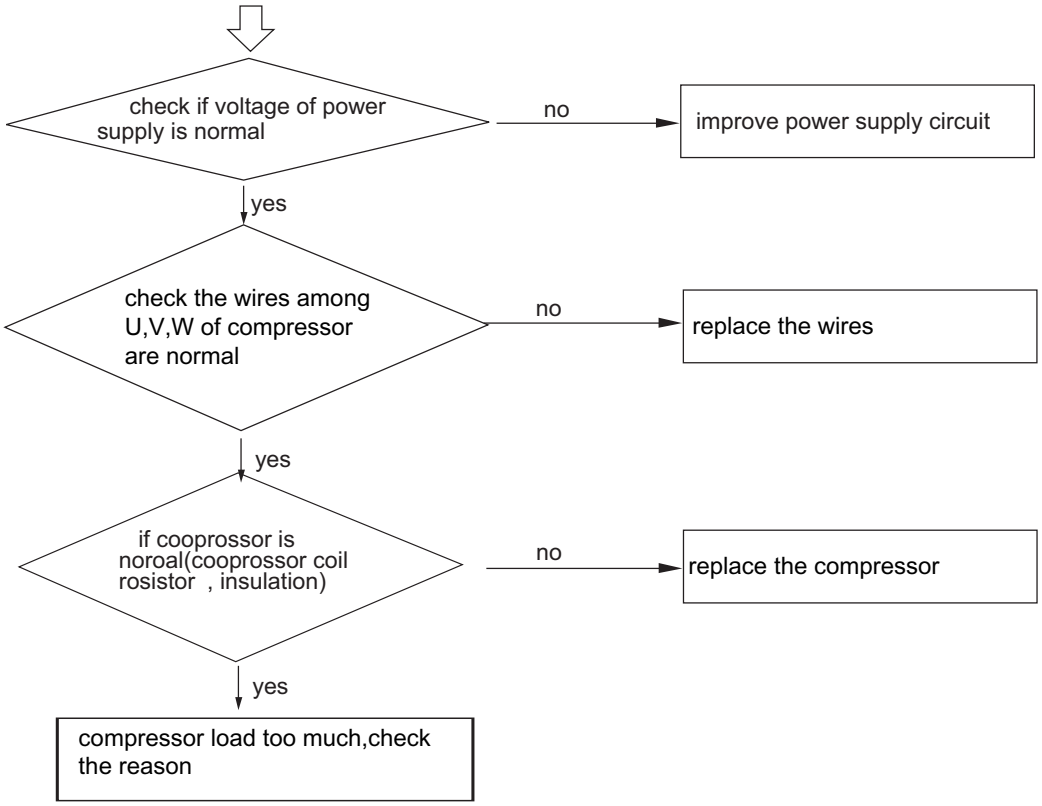
[75] no pressure drop between high pressure and low one



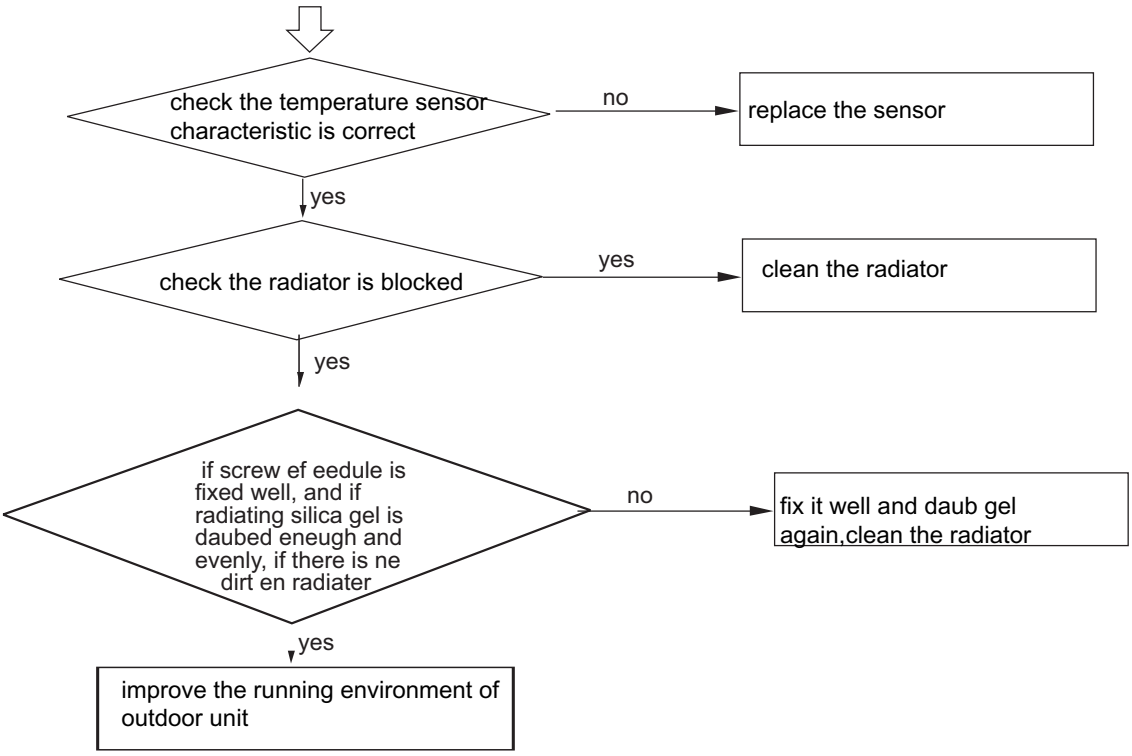
[110] power module overcurrent



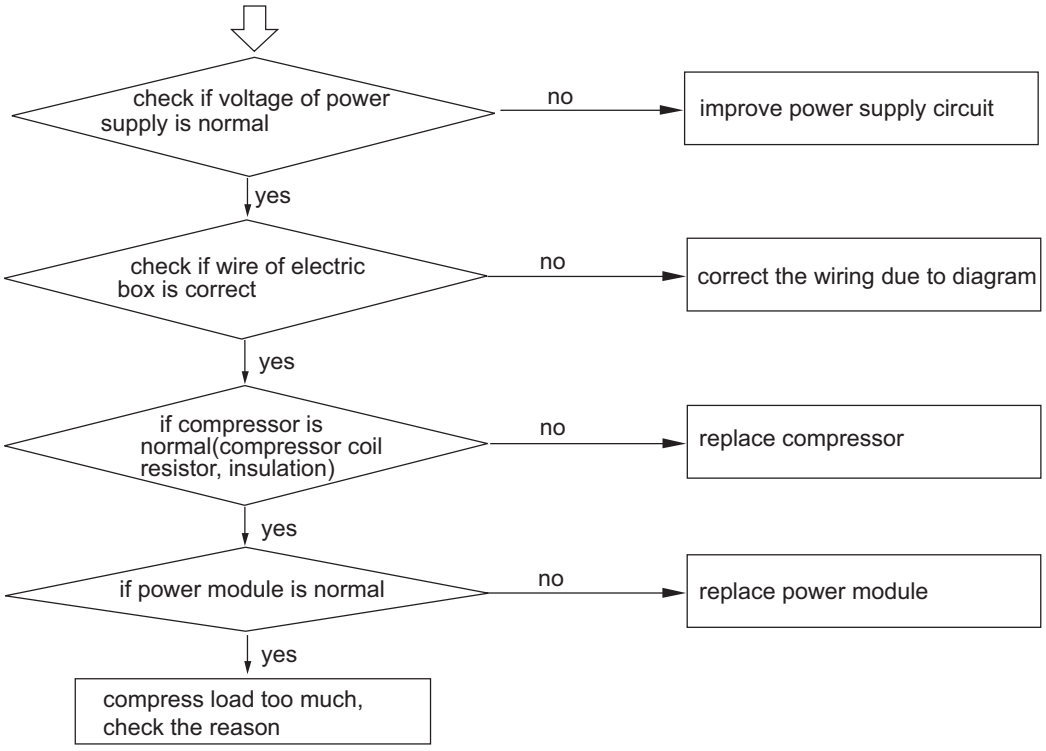
[111] compressor out of control



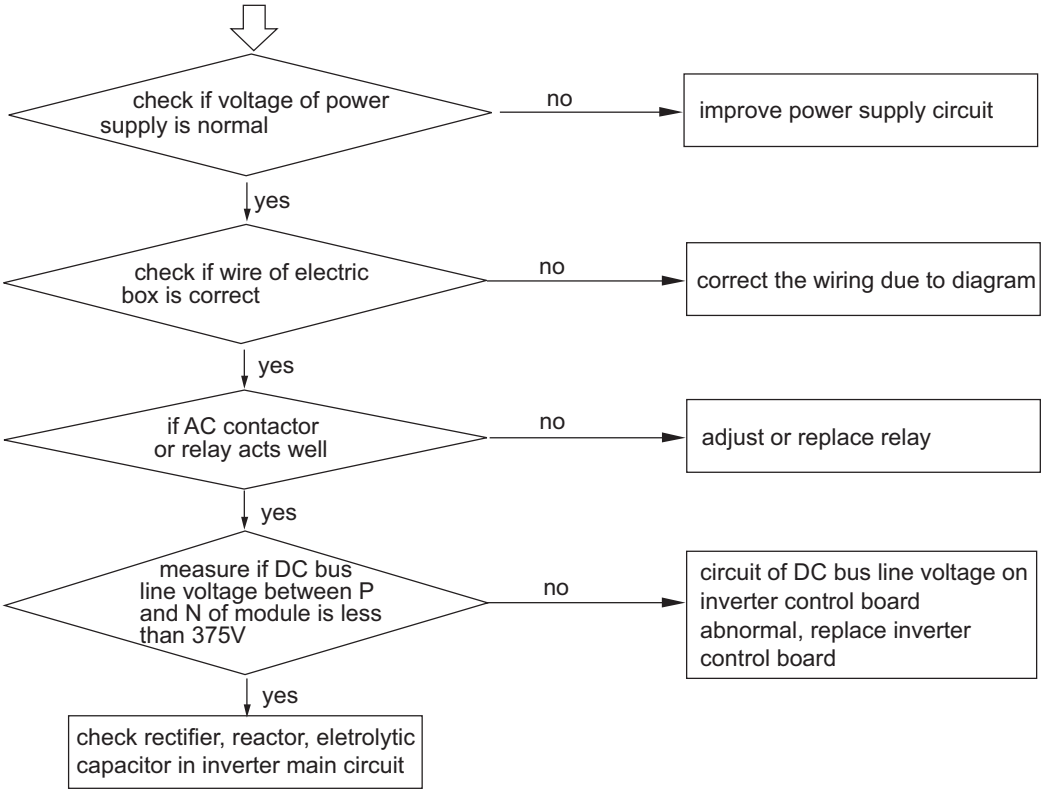
[112] radiator of transducer temp.too high


check the temperature sensor characteristic is correct
no
replace the sensor
yes
check the radiator is blocked
yes
clean the radiator
yes
if screw ef eedule is fixed well, and if radiating silica gel is daubed eneugh and evenly, if there is ne dirt en radiater
no
fix it well and daub gel again,clean the radiator
yes
improve the running environment of outdoor unit

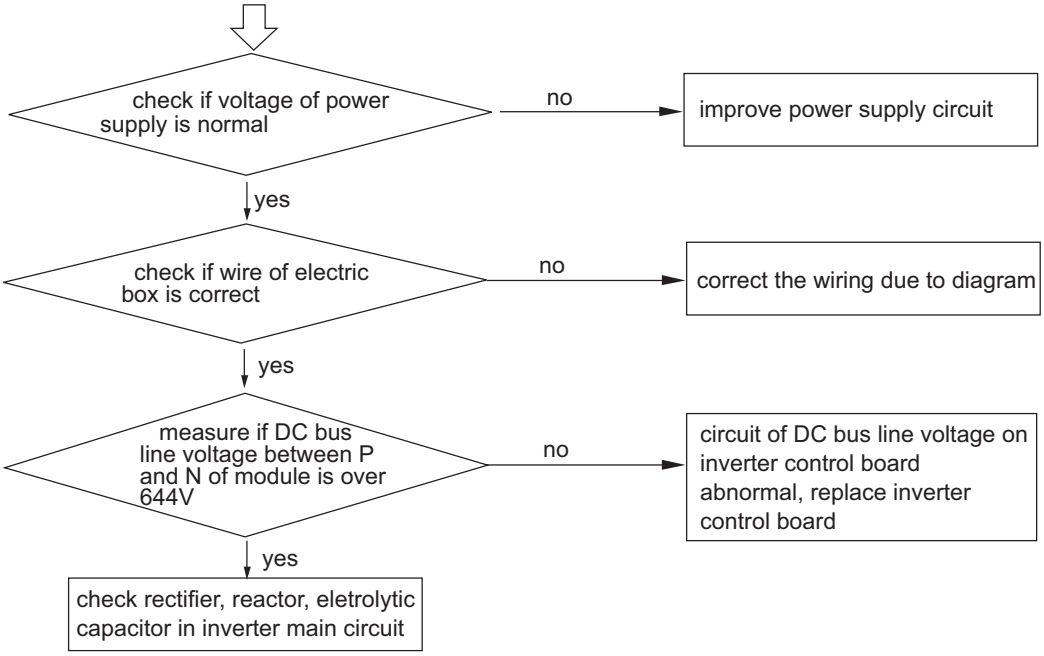
[113] protection of overload



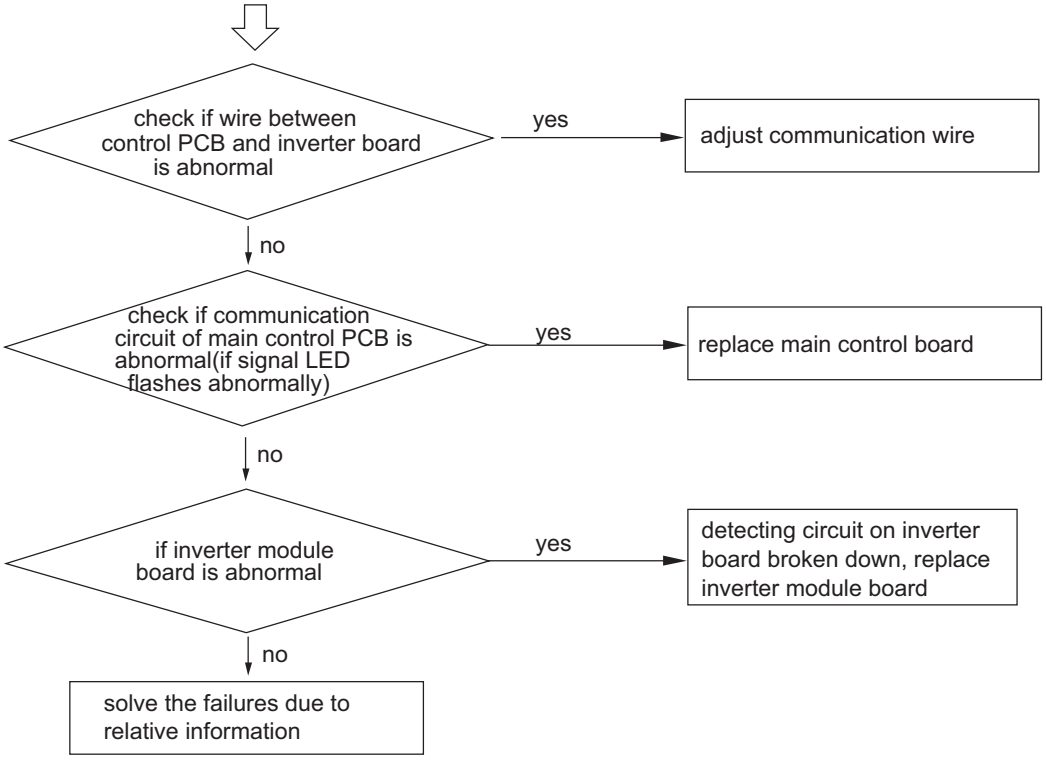
[114] voltage too low of DC bus line of transducer


check if voltage of power supply is normal
no
improve power supply circuit
yes
check if wire of electric box is correct
no
correct the wiring due to diagram
yes
if AC contactor or relay acts well
no
adjust or replace relay
yes
measure if DC bus line voltage between P and N of module is less than 375V
no
circuit of DC bus line voltage on inverter control board abnormal, replace inverter control board
yes
check rectifier, reactor, eletrolytic capacitor in inverter main circuit

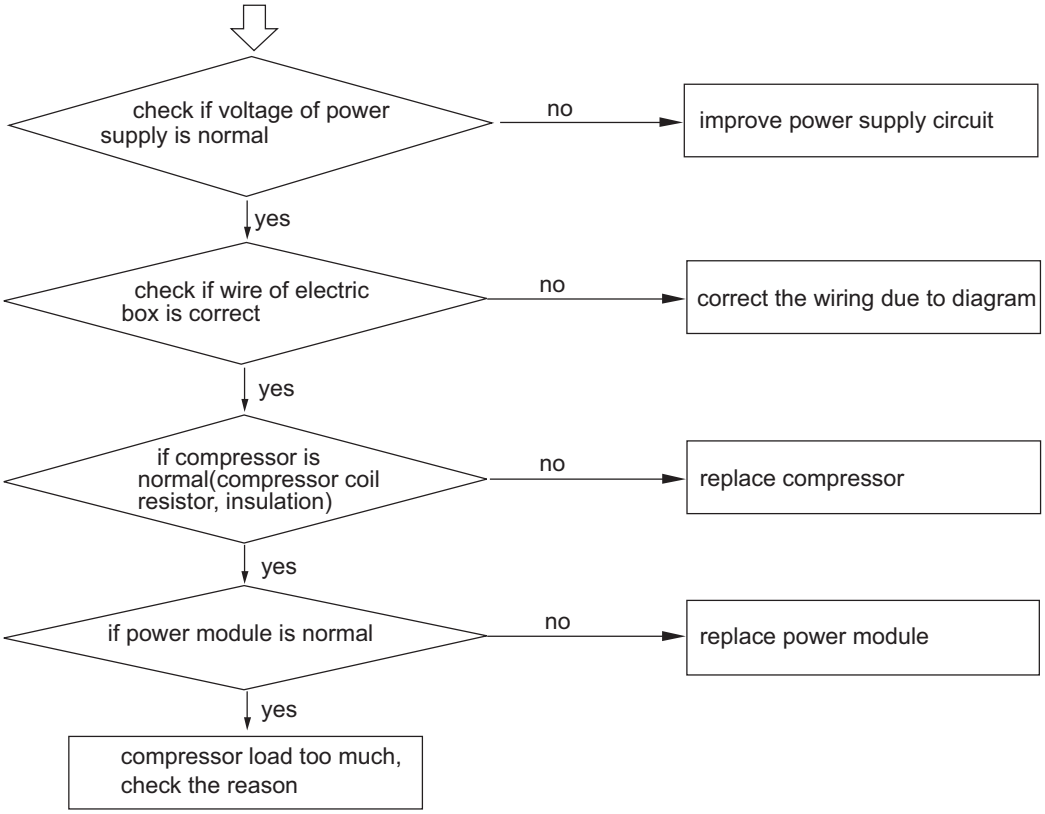
[115] voltage too high of DC bus line of transducer


check if voltage of power supply is normal
no
improve power supply circuit
yes
check if wire of electric box is correct
no
correct the wiring due to diagram
yes
measure if DC bus line voltage between P and N of module is over 644V
no
circuit of DC bus line voltage on inverter control board abnormal, replace inverter control board
yes
check rectifier, reactor, eletrolytic capacitor in inverter main circuit

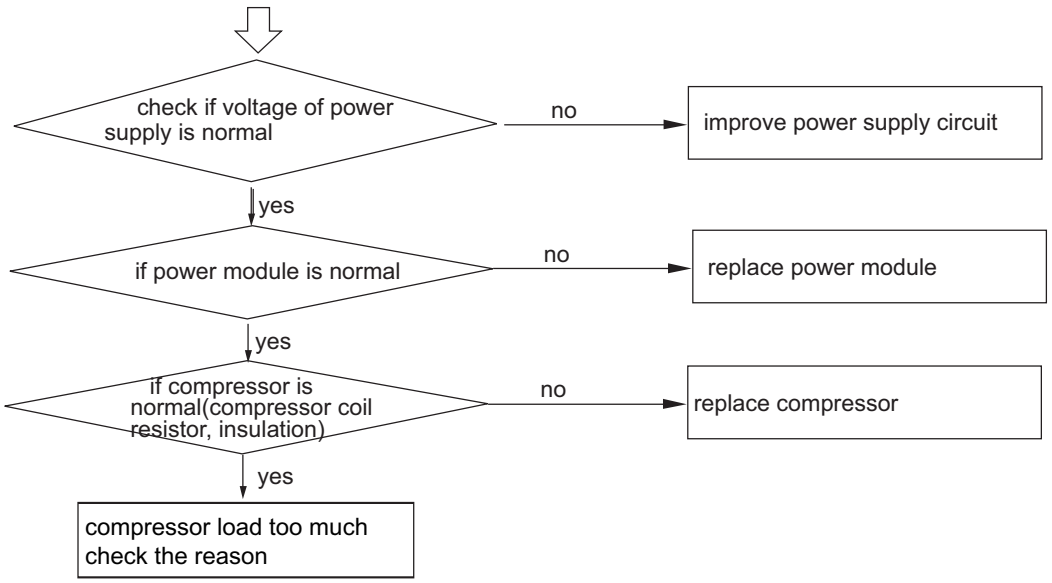
[116] communication abnormal between transducer(inverter module board) and control PCB


check if wire between control PCB and inverter board is abnormal
yes
adjust communication wire
no
check if communication circuit of main control PCB is abnormal(if signal LED flashes abnormally)
yes
replace main control board
no
if inverter module board is abnormal
yes
detecting circuit on inverter board broken down, replace inverter module board
no
solve the failures due to relative information

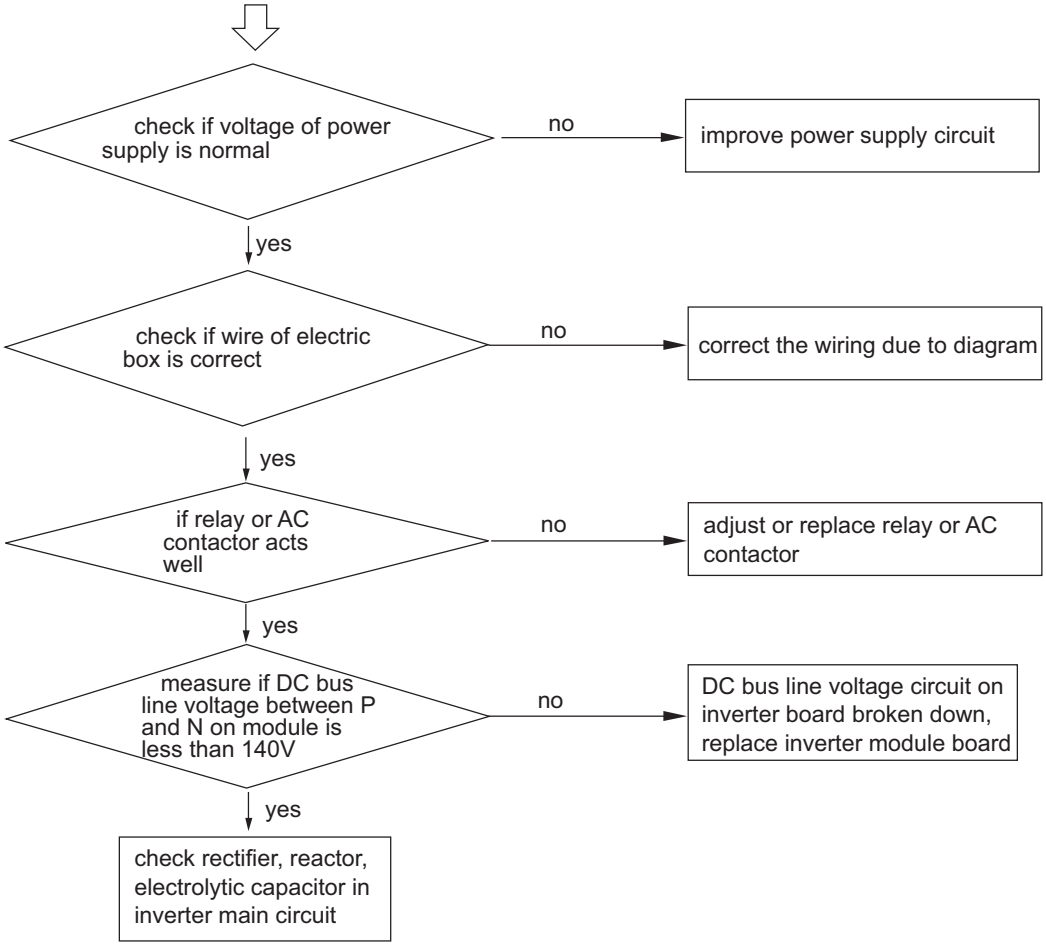
[117] transducer over current(software protection)



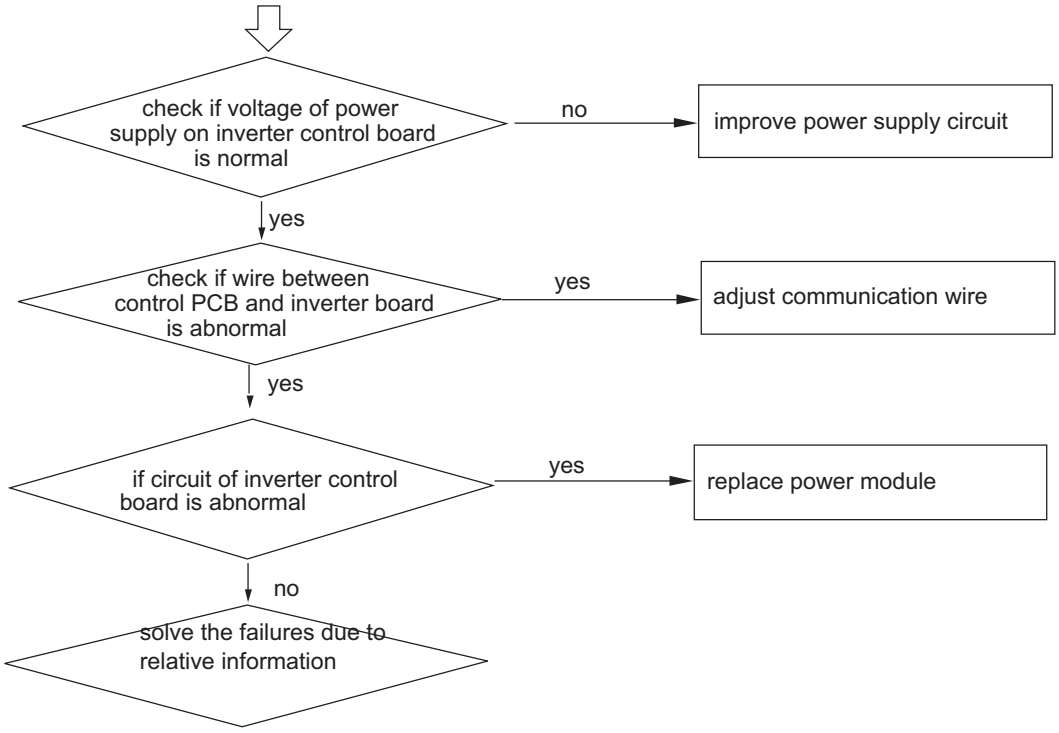
[118] compressor startup failure



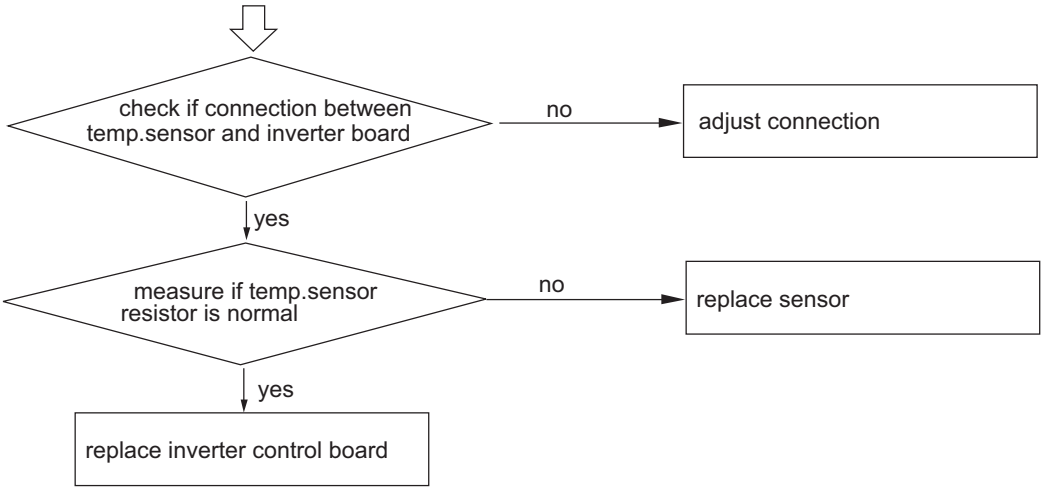
[120] power supply of transducer abnormal


check if voltage of power supply is normal
no
improve power supply circuit
yes
check if wire of electric box is correct
no
correct the wiring due to diagram
yes
if relay or AC contactor acts well
no
adjust or replace relay or AC contactor
yes
measure if DC bus line voltage between P and N on module is less than 140V
no
DC bus line voltage circuit on inverter board broken down, replace inverter module board
yes
check rectifier, reactor, electrolytic capacitor in inverter main circuit

[121] power supply of inverter board is abnormal


check if voltage of power supply on inverter control board is normal
no
improve power supply circuit
yes
check if wire between control PCB and inverter board is abnormal
yes
adjust communication wire
yes
if circuit of inverter control board is abnormal
yes
replace power module
no
solve the failures due to relative information

[122] radiator temp.sensor of transducer abnormal



APPENDIX

1. Sensor characteristic

Temp. sensor characteristic

No.	Sensor type	Characteristic
1	Indoor coil/ outdoor Ta 、Te1、Te2 、Ts	R(25℃)=10KΩ B(25℃/50℃)=3700K
2	Indoor ambient temp.sensor	R(25℃)=23KΩ B(25℃/50℃)=4200K
3	Outdoor Td 、Toil	R(80℃)=50KΩ B(25℃/80℃)=4450K
4	Outdoor Tfin	R(50℃)=17KΩ B(25℃/50℃)=4170K

Herein, the sensor typical resistor is as follows:

(1) R(25℃)=10KΩ B(25℃/50℃)=3700K

temp. sensor			
temp.(℃)	resistor(KΩ)	temp.(℃)	resistor(KΩ)
- 10	51.8	60	2.660
- 5	39.55	65	2.223
0	30.88	70	1.912
5	24.30	75	1.630
10	19.20	80	1.395
15	15.38	85	1.200
20	12.36	90	1.035
25	10.00	95	0.8967
30	8.141	100	0.7796
35	6.668	105	0.6802
40	5.492	110	0.5955
45	4.549	- 15	66.53
50	3.788	- 20	87.42
55	3.170	-25	116.0

(2) R(25℃)=23KΩ B(25℃/50℃)=4200K

temp. sensor			
temp.(℃)	resistor(KΩ)	temp.(℃)	resistor(KΩ)
- 10	139.5	60	5.243
- 5	105.3	65	4.336
0	80.14	70	3.603
5	61.51	75	3.008
10	47.58	80	2.522
15	35.36	- 20	251.8
20	27.93	- 19	235.9
25	23.00	- 18	223.1
30	18.30	- 17	210.1
35	14.65	- 16	197.9
40	11.79	- 15	186.5
45	9.556	- 14	176.9
50	7.780	- 13	165.9
55	6.371	- 12	156.5

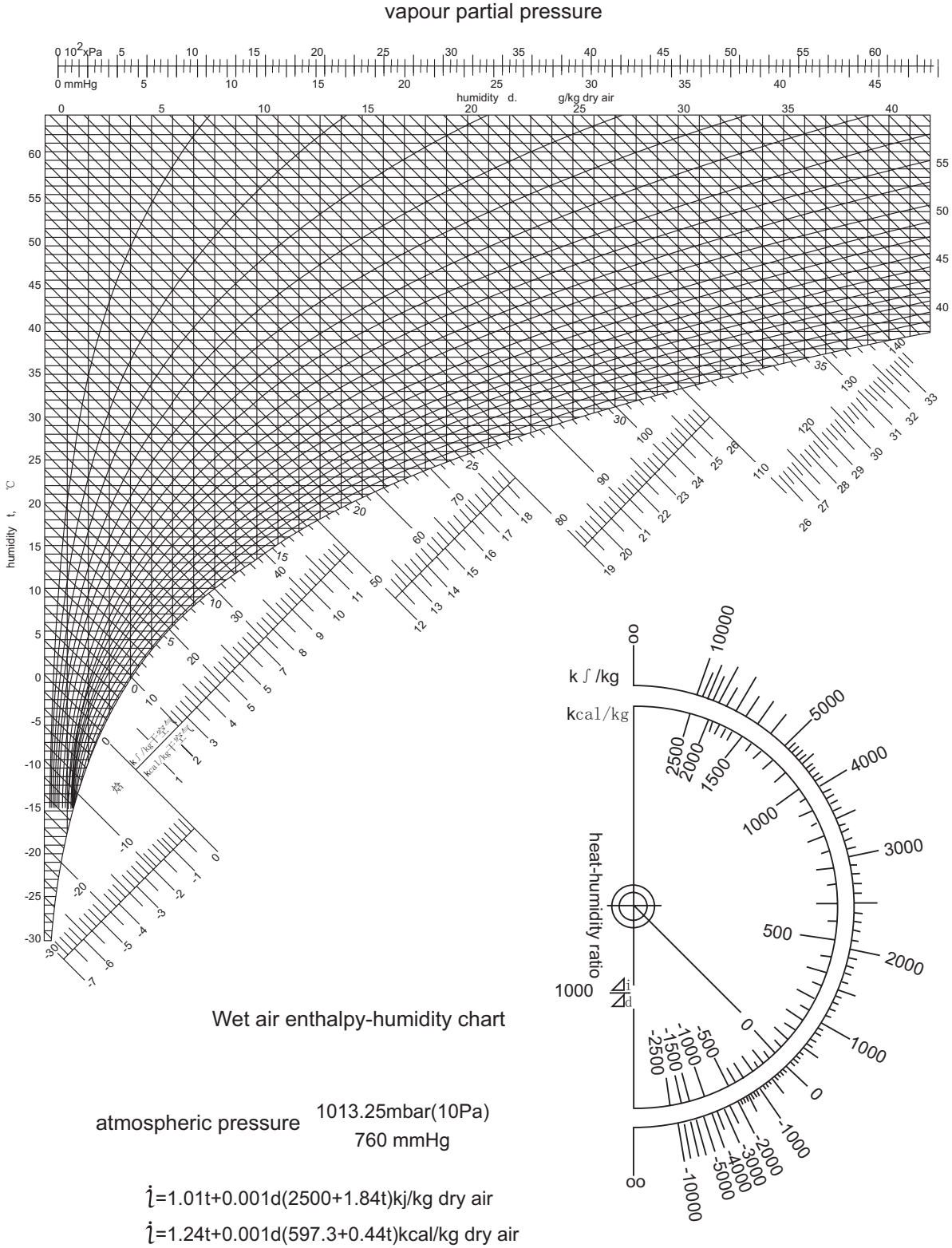
(3) R(80℃)=50KΩ B(25℃/80℃)=4450K

temp. sensor			
temp.(℃)	resistor(KΩ)	temp.(℃)	resistor(KΩ)
15	878.5	85	41.5
20	621.4	90	34.8
25	599.9	95	29.6
30	398.6	100	25.0
40	246.4	105	21.7
50	160.4	110	18.7
60	105.3	115	16.0
70	72.1	120	13.8
75	59.5	125	11.9
80	49.3	130	10.3

(4) R(50℃)=17KΩ B(25℃/50℃)=4170K

Temp. sensor			
Temp（℃）	KΩ	Temp（℃）	KΩ
0	176.38	55	13.93
5	135.07	60	11.46
10	104.30	65	9.49
15	81.17	70	7.89
20	63.65	75	6.59
25	50.27	80	5.53
30	39.97	85	4.66
35	31.99	90	3.94
40	25.76	95	3.34
45	20.87	100	2.85
50	17.00	105	2.44

2. Enthalpy-humidity chart



Wet air enthalpy-humidity chart

atmospheric pressure 1013.25mbar(10Pa)
760 mmHg

$i=1.01t+0.001d(2500+1.84t)$kj/kg dry air

$i=1.24t+0.001d(597.3+0.44t)$kcal/kg dry air

3. Saturated R410A themodynamic characteristic

t i	p' kPa	p" kPa	ρ' kg/m³	ρ" kg/m³	s' kJ/kgK	s" kJ/kgK	h kJ/kg	h" kJ/kg	t' kJ/KgK	t" kJ/KgK
-70	36.13	36.11	1410.7	1.582	1.372	0.695	100.8	390.6	0.649	2.074
-68	40.83	40.80	1404.7	1.774	1.374	0.700	103.6	391.8	0.663	2.066
-66	46.02	45.98	1398.6	1.984	1.375	0.705	106.3	393.0	0.676	2.058
-64	51.73	51.68	1392.5	2.213	1.377	0.710	109.1	394.1	0.689	2.051
-62	58.00	57.94	1386.4	2.463	1.378	0.715	111.9	395.3	0.702	2.044
-60	64.87	64.80	1380.2	2.734	1.379	0.720	114.6	396.4	0.715	2.037
-58	72.38	72.29	1374.0	3.030	1.380	0.726	117.4	397.6	0.728	2.030
-56	80.57	80.46	1367.8	3.350	1.382	0.732	120.1	398.7	0.741	2.023
-54	89.49	89.36	1361.6	3.696	1.384	0.737	122.9	399.8	0.754	2.017
-52	99.18	99.03	1355.3	4.071	1.386	0.744	125.7	400.9	0.766	2.010
-51.58	101.32	101.17	1354.0	4.153	1.386	0.745	126.3	401.1	0.769	2.009
-50	109.69	109.51	1349.0	4.474	1.388	0.750	128.5	402.0	0.779	2.004
-48	121.07	120.85	1342.7	4.909	1.391	0.756	131.2	403.1	0.791	1.998
-46	133.36	133.11	1336.3	5.377	1.394	0.763	134.0	404.1	0.803	1.992
-44	146.61	146.32	1330.0	5.880	1.397	0.770	136.8	405.2	0.816	1.987
-42	160.89	160.55	1323.5	6.419	1.401	0.777	139.6	406.2	0.828	1.981
-40	176.24	175.85	1317.0	6.996	1.405	0.785	142.4	407.3	0.840	1.976
-38	192.71	192.27	1310.5	7.614	1.409	0.792	145.3	408.3	0.852	1.970
-36	210.37	209.86	1304.0	8.275	1.414	0.800	148.1	409.3	0.864	1.965
-34	229.26	228.69	1297.3	8.980	1.419	0.809	150.9	410.2	0.875	1.960
-32	249.46	248.81	1290.6	9.732	1.424	0.817	153.8	411.2	0.887	1.955
-30	271.01	270.28	1283.9	10.53	1.430	0.826	156.6	412.1	0.899	1.950
-28	293.99	293.16	1277.1	11.39	1.436	0.835	159.5	413.1	0.911	1.946
-26	318.44	317.52	1270.2	12.29	1.442	0.844	162.4	414.0	0.922	1.941
-24	344.44	343.41	1263.3	13.26	1.448	0.854	165.3	414.9	0.934	1.936
-22	372.05	370.90	1256.3	14.28	1.455	0.864	168.2	415.7	0.945	1.932
-20	401.34	400.06	1249.2	15.37	1.461	0.875	171.1	416.6	0.957	1.927
-18	432.36	430.95	1242.0	16.52	1.468	0.886	174.1	417.4	0.968	1.923
-16	465.20	463.64	1234.8	17.74	1.476	0.897	177.0	418.2	0.980	1.919
-14	499.91	498.20	1227.5	19.04	1.483	0.909	180.0	419.0	0.991	1.914
-12	536.58	534.69	1220.0	20.41	1.491	0.921	182.9	419.8	1.003	1.910
-10	575.26	573.20	1212.5	21.86	1.499	0.933	185.9	420.5	1.014	1.906
-8	616.03	613.78	1204.9	23.39	1.507	0.947	189.0	421.2	1.025	1.902
-6	658.97	656.52	1197.2	25.01	1.516	0.960	192.0	421.9	1.036	1.898
-4	704.15	701.49	1189.4	26.72	1.524	0.975	195.0	422.6	1.048	1.894
-2	751.64	748.76	1181.4	28.53	1.533	0.990	198.1	423.2	1.059	1.890
0	801.52	798.41	1173.4	30.44	1.543	1.005	201.2	423.8	1.070	1.886
2	853.87	850.52	1165.3	32.46	1.552	1.022	204.3	424.4	1.081	1.882
4	908.77	905.16	1157.0	34.59	1.563	1.039	207.4	424.9	1.092	1.878
6	966.29	962.42	1148.6	36.83	1.573	1.057	210.5	425.5	1.103	1.874
8	1026.5	1022.4	1140.0	39.21	1.584	1.076	213.7	425.9	1.114	1.870
10	1089.5	1085.1	1131.3	41.71	1.596	1.096	216.8	426.4	1.125	1.866
12	1155.4	1150.7	1122.5	44.35	1.608	1.117	220.0	426.8	1.136	1.862
14	1224.3	1219.2	1113.5	47.14	1.621	1.139	223.2	427.2	1.147	1.859
16	1296.2	1290.8	1104.4	50.09	1.635	1.163	226.5	427.5	1.158	1.855
18	1371.2	1365.5	1095.1	53.20	1.650	1.188	229.7	427.8	1.169	1.851
20	1449.4	1443.4	1085.6	56.48	1.666	1.215	233.0	428.1	1.180	1.847
22	1530.9	1524.6	1075.9	59.96	1.683	1.243	236.4	428.3	1.191	1.843
24	1615.8	1609.2	1066.0	63.63	1.701	1.273	239.7	428.4	1.202	1.839
26	1704.2	1697.2	1055.9	67.51	1.721	1.306	243.1	428.6	1.214	1.834
28	1796.2	1788.9	1045.5	71.62	1.743	1.341	246.5	428.6	1.225	1.830
30	1891.9	1884.2	1034.9	75.97	1.767	1.379	249.9	428.6	1.236	1.826
32	1991.3	1983.2	1024.1	80.58	1.793	1.420	253.4	428.6	1.247	1.822
34	2094.5	2086.2	1012.9	85.48	1.822	1.465	256.9	428.4	1.258	1.817
36	2201.7	2193.1	1001.4	90.68	1.855	1.514	260.5	428.3	1.269	1.813
38	2313.0	2304.0	989.5	96.22	1.891	1.569	264.1	428.0	1.281	1.808
40	2428.4	2419.2	977.3	102.1	1.932	1.629	267.8	427.7	1.292	1.803
42	2548.1	2538.6	964.6	108.4	1.979	1.696	271.5	427.2	1.303	1.798
44	2672.2	2662.4	951.4	115.2	2.033	1.771	275.3	426.7	1.315	1.793
46	2800.7	2790.7	937.7	122.4	2.095	1.857	279.2	426.1	1.327	1.788
48	2933.7	2923.6	923.3	130.2	2.168	1.955	283.2	425.4	1.339	1.782
50	3071.5	3061.2	908.2	138.6	2.256	2.069	287.3	424.5	1.351	1.776
52	3214.0	3203.6	892.2	147.7	2.362	2.203	291.5	423.5	1.363	1.770
54	3361.4	3351.0	875.1	157.6	2.493	2.363	295.8	422.4	1.376	1.764
56	3513.8	3503.5	856.8	168.4	2.661	2.557	300.3	421.0	1.389	1.757
58	3671.3	3661.2	836.9	180.4	2.883	2.799	305.0	419.4	1.403	1.749
60	3834.1	3824.2	814.9	193.7	3.191	3.106	310.0	417.6	1.417	1.741
62	4002.1	3992.7	790.1	208.6	3.650	3.511	315.3	415.5	1.433	1.732
64	4175.7	4166.8	761.0	225.6	4.415	4.064	321.2	413.0	1.450	1.722